NUCLEAR ENERGY ENGINEER

WORLD SURVEY OF FILMS ON NUCLEAR ENERGY

With foreword by Sir John Cockcroft, OM, FRS

CONTENTS

FULL DETAILS OF OVER 200 FILMS
CLASSIFIED INDEX OF TITLES
NAMES AND ADDRESSES OF DISTRIBUTORS
and
"HOW TO CHOOSE A PROJECTOR"

Supplement to "NUCLEAR ENERGY ENGINEER"
June, 1959

Sir John Cockcroft takes a look at a Bell and Howell projector shown at the recent Harrogate Festival of Films in the Service of Industry.

FOREWORD by

SIR JOHN COCKCROFT, OM, FRS

WE live in a time when there is pressing need for a wide dissemination of information about what scientists and engineers are doing.

The layman is apt to think of " the scientist " as a member of an homogeneous body in which each individual—rather like a bee in a hive —is immediately and telepathically aware of what all his brother scientists are thinking.

This is, unfortunately, far from the truth. The rate of advance and degree of specialization in the sciences is now so great that the scientist is hard put to it to keep pace with developments outside his own specialized field—even, sometimes, within it.

The problem must be even more acute for the engineer who tries to relate the activities of the scientist to his own techniques and maintain an up-to-date picture of advances that may have a bearing on his problems.

On the other hand, there are many fields of applied research in which the scientist cannot produce the right answers unless he grasps the aims and difficulties of the engineer.

These are problems with which we are very familiar in the Atomic Energy Authority, since our pioneer activities in the reactor field have only succeeded and will only continue to succeed so long as scientists and engineers work together as a closely-knit team.

Of the many media which we use towards this end the film is not the least important.

I personally use films a great deal and rarely go to address an audience overseas, for example, without taking one or two " cans " in my luggage as an ancillary to my lecture notes.

The well-made film has an immediacy and vividness which make it a most valuable instrument in the orchestra of communication and I am sure that a very useful purpose will be served by this up-to-date survey of films on atomic energy.

J. D. Cockcroft

This survey is primarily intended for use as a guide by lecturers, teachers and organizers of educational and instructional meetings and its contents have been arranged with this in mind.

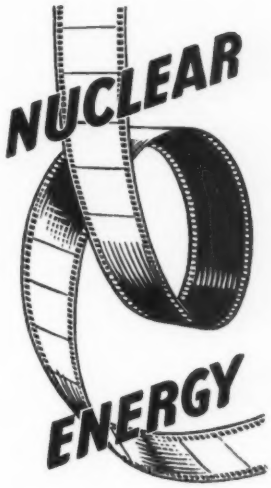
A classified list of the titles of over 200 films appears on pages 3-5.

Full details of these films (in alphabetical order) including the names of the producers and distributors for non-commercial screenings follow on pages 6-21.

Addresses of distributors in the United Kingdom and overseas are given on pages 22-23.

An article on points to look for when selecting a film projector appears on page 22.

CLASSIFIED TITLE INDEX



Films are classified in this index according to their principal contents. Because these are not always easy to label under one particular heading many titles will be found listed under more than one classification. Mechanical details and contents of the films, including names of distributors, are given on pages 6-21, where titles are arranged in alphabetical order

AGRICULTURE and Nuclear Energy
- Agriculture, Industry and Power—U.S.A.
- Atom and Agriculture, The—U.S.A.
- Atomic Age Farmer—U.S.A.
- Atomic Greenhouse, The—U.S.A.
- Atomic Research: Areas and developments—U.S.A.
- Atomic Zoo, The—U.S.A.
- En Quete des Radioelements (1957-58)—France
- Radioisotopes in Agricultural Research (1952)—U.S.A.

CAREER, Nuclear Energy as a
- Inquiring Mind—U.K.
- Jobs in Atomic Energy—U.S.A.
- On Course with AEI (1959)—U.K.
- Training Men for the Atomic Age—U.S.A.

CHEMISTRY
- Atomic Alchemists, The—U.S.A.
- Radioisotopes in General Sciences (1952)—U.S.A.
- Radiopharmaceuticals: From Reactor to Physician (1958)—U.S.A.
- Reactor Fuel Processing (1958)—U.S.A.

CYCLOTRON
- *See under "EQUIPMENT, Nuclear."*

EQUIPMENT, Nuclear: particle accelerators, cyclotrons, radiation detectors, monitors, etc.
- Argonne Gamma Irradiation Facility (1957)—U.S.A.
- Atomic Smashers—U.S.A.
- Atomic Detective—U.S.A.
- Atomic Research: Areas and Developments—U.S.A.
- Fundamentals of Radiac Instruments—U.S.A.
- High Energy Particle Accelerators (1958)—U.S.A.
- High Energy Radiations for Mankind (1958)—U.S.A.
- High Voltage Equipment at Mount Vernon Hospital, Northwood. —U.K.
- Ionizing Radiations in Humans (1958)—U.S.A.
- Linear Accelerator, The (1955)—U.K.
- Liquid Scintillation Counting (1958)—U.S.A.
- Master Slave, The—U.S.A.
- MRC Cyclotron, The—U.K.
- Practical Procedures of Measurement (1952)—U.S.A.

EXPERIMENTS, Techniques and Reactor Operations
- BEPO Wigner Energy Release—U.K.
- EBR-I Core Disassembly After Meltdown (1958)—U.S.A.
- EBR-II Fuel Cycle Development (1958)—U.S.A.
- Loop Disposal—U.K.
- Organic Moderated Reactor Experiment (1958)—U.S.A.
- Safety Aspects of Experiments with a Boiling Reactor (1955)—U.S.A.

EXPLOSIVES, Nuclear
- Industrial Applications of Nuclear Explosives (1958)—U.S.A.

FUEL PRODUCTION AND PROCESSING
- *See also under "URANIUM"*
- Atomic Goldrush—U.S.A.
- EBR-I Core Disassembly After Meltdown (1958)—U.S.A.
- EBR-II Fuel Cycle Development (1958)—U.S.A.
- Fabrication of Research Reactor Fuel Elements (1958)—U.S.A.

FUEL PRODUCTION AND PROCESSING—*continued*
- Gaseous Diffusion—U.S.A.
- Naissance d'Une Usine L9 (1958)—France
- Novel Methods of Fuel Fabrication (1958)—U.S.A.
- Plutonium Fuel Fabrication for MTR (1958)—U.S.A.
- Reactor Fuel Processing (1958)—U.S.A.
- Uranium-235—France
- Uranium: From the Ore to the Metal (1958)—France
- Uranium Francais (1958)—France

FUSION
- Research into Controlled Fusion (1958)—U.S.A.
- Thermonuclear Research in U.S.S.R. (1958)—U.S.S.R.

GENERAL
- A is for Atom—U.S.A.—1955
- Agriculture, Industry and Power—U.S.A.
- Another Name for Power (1959)—U.K.
- Atom and You, The—U.S.A.
- Atom Comes to Town, The—U.S.A.
- Atom Goes to Sea, The—U.S.A.
- Atomic Achievement—U.K.—1955
- Atomic Research: Areas and Developments—U.S.A.
- Atoms at Work—U.K.
- Atoms for Industry (1955)—U.K.
- Atoms for Peace—U.S.A.
- Atoms for Peace (1956)—U.S.S.R.
- Building for Atomic Energy (1958)—U.S.A.
- l'Aube d'Une Monde (1956)—France
- Canada's Atom Goes to Work—Canada
- Dawn's Early Light, A—U.S.A.
- Energie aus Materie—Germany
- Energie Atomique (1956)—France
- Fast Reactor Program (1958)—U.S.A.
- Future is Electric, The (1958)—U.K.
- Introducing the Atom (1955)—U.S.A.
- More Power from the Atom (1958)—U.K.
- Nuclear Reactors in Germany—Germany
- Peaceful Utilization of Atomic Energy in the Roumanian Peoples' Republic—Roumania.
- Power Reactors—U.S.A. (1958)—U.S.A.
- Power Unlimited—U.S.A.
- Research into Controlled Fusion (1958)—U.S.A.
- Research Reactors—U.S.A. (1958)—U.S.A.
- Scientific Advancement—U.S.A.
- Security—U.S.A.
- Spraypak—U.K.
- Story of Energy—India
- Visit to Jener, A—Norway
- Working Together—U.S.A.

HEALTH HAZARDS
- *See under "SAFETY"*

HISTORY
Atomic Physics—U.K.
Conquest of the Atom—U.K.
Criticality—U.K.
Rutherford, Lord, on the Atom—U.K.
Mystery of Matter, The—U.S.S.R.

INDUSTRY, and Nuclear Energy
Agriculture, Industry and Power—U.S.A.
Atom and You, The—U.S.A.
Atom in Industry, The—U.S.A.
Atomic Research: Areas and Developments—U.S.A.
En Quete des Radioelements (1957-58)—France
Gauging Thickness with Radioisotopes (1958)—U.S.A.
High Energy Radiations for Mankind (1958)—U.S.A.
Industrial Atom, The—U.S.A.
Industrial Isotope Atom, The—U.S.A.
Isotopes in Industry (1954)—U.K.
Lubricants for Nuclear Power Stations—U.K.
New Tool for Industry, A (1955)—U.K.
Project 074—U.K.
Radioisotopes in Industry (1958)—U.K.

MARINE PROPULSION
Atom Goes to Sea, The—U.S.A.
Atom Icebreaker, The (1958)—U.S.S.R.
Dawn's Early Light, A—U.S.A.
Naval Research Laboratory Reactor (1958)—U.S.A.

MEDICINE, Biology and Nuclear Energy
Atom and Biological Science, The—U.S.A.
Atom and the Doctor, The—U.S.A.
Atomic Apothecary, The—U.S.A.
Atomic Biology For Medicine—U.S.A.
Atomic Greenhouse, The—U.S.A.
Atoms for Health—U.S.A.
Atomic Pharmacy, The—U.S.A.
Chromosome Labelling by Tritium (1958)—U.S.A.
Cobalt-60 Reloading (1958)—U.S.A.
Cyclotron Irradiation of the Pituitary (1958)—U.S.A.
Eternal Cycle, The—U.S.A.
Handling and Measurement of Radioactive Isotopes for Clinical Use, The—U.K.
High Energy Radiations for Mankind (1958)—U.K.
Iodine-131 (1958)—U.S.A.
Iodine and Phosphorus—U.K.
Isotopes en Médecine et Biologie, Les—France
Medical Research Reactor (1958)—U.S.A.
Medicine (1955)—U.S.A.
Methodology (1952)—U.S.A.
Modification of Radiation Injury in Mice (1958)—U.S.A.
MRC Cyclotron, The—U.K.
Non-Root Feeding of Plants (1958)—U.K.
Pituitary Implantation with Au-198—U.K.
Radiation: Silent Servant of Mankind—U.S.A.
Radioactive Isotopes—U.K.
Radioactivity—Norway
Radioisotopes in General Sciences (1958)—U.S.A.
Radioisotopes: Their Applications to Humans—U.S.A.
Radiopharmaceuticals: From Reactor to Physician (1958)—U.S.A.
Riddle of Photosynthesis, The—U.S.A.
Rotation X-Ray Therapy—U.K.
Service de la Vie, Au—France
Teletherapy and Brachytherapy (1958)—U.S.A.

METALLURGY
Adventures in Metallurgy (1958)—U.S.A.
Atomic Metallurgy—U.S.A.
Fabrication of Research Reactor Fuel Elements (1958)—U.S A.
Metals of the Nuclear Age (1958)—U.K.
Microdeformation of Uranium (1958)—U.S.A.
Plutonium Metal Preparation (1958)—U.S.A.

NUCLEAR PHYSICS
A is for Atom—U.S.A.—1955
Atom Smashers—U.S.A.
Atomic Energy (1947)—U.S.A.

NUCLEAR PHYSICS—*continued*
Atomic Physics (1948)—U.K.
Bragg, Sir William, on Radioactivity (1935)—U.K.
Conquest of the Atom—U.K.
Criticality (1957)—U.K.
Energie aus Materie—Germany
Fundamentals of Radiac Instruments—U.S.A.
Fundamentals of Radioactivity (1952)—U.S.A.
Inside the Atom (1948)—Canada
Introducing the Atom (1955)—U.S.A.
Rutherford, Lord, on the Atom (1935)—U.K.
Mystery of Matter, The—U.S.S.R.
Principles of Nuclear Fission (1958)—U.K.
Properties of Radiation (1952)—U.S.A.
Research into Controlled Fusion (1958)—U.S.A.
Thomson, Sir Joseph, on Electrons (1935)—U.K.
Spaltung des Atoms, Die—Germany
Structure of Matter (1952)—Hungary
Unlocking the Atom—U.S.A.

PARTICLE ACCELERATORS
See under: "EQUIPMENT," Nuclear

POWER STATIONS
Atomic Achievement—U.K.—1955
Atomic Power at Shippingport (1958)—U.S.A.
Bradwell (1958)—U.K.
Calder Hall (1955)—U.K.
Construction of Calder Hall, The (1955)—U.K.
Dresden Nuclear Power Station (1958)—U.S.A.
Engineering at Calder Hall—U.K.
First in the World (1955)—U.S.S.R.
First in the World (1958)—U.K.
Great Day (1956)—U.K.
Heat Exchangers at Calder Hall—U.K.
Marcoule, Cité Atomique (1957)—France

RADIATION, and Radioactivity
See under:
Agriculture and nuclear energy
Equipment
Industry and Nuclear Energy
Medicine, Biology and Nuclear Energy
Radioisotopes, General
Safety

RADIOISOTOPES, General
For films about radioisotopes in certain fields see under the following headings:
Agriculture and Nuclear Energy
Chemistry
Industry and Nuclear Energy
Medicine, Biology and Nuclear Energy
Safety
The films listed here are either general surveys or about subjects not dealt with under above classifications
Agriculture, Industry and Power—U.S.A.
Argonne Gamma Irradiation Facility (1957)—U.S.A.
Atom and the Weather, The—U.S.A.
Atom and You, The—U.S.A.
Atomic Alchemists, The—U.S.A.
Atomic Pharmacy, The—U.S.A.
Atoms at Work—U.K.
Atoms for Peace—U.S.A.
Engineering for Radioisotopes—U.S.A.
En Quete des Radioelements (1957-58)—France
Fundamentals of Radioactivity—U.S.A.
High Energy Radiations for Mankind—U.S.A.
Radioisotopes in General Sciences (1952)—U.S.A.
Strahlenspione (1959)—Germany
Tagging the Atom—U.S.A.
Utilization of Radioisotopes in the Federal Republic—Germany

REACTORS
Argonaut, The—U.S.A.—1957
Armour Research Reactor—U.S.A.—1958
Atom Goes to Sea, The—U.S.A.
Atomic Achievement—U.K.—1955
Atomic Furnaces—U.S.A.

REACTORS—*continued*

BORAX: Construction and Operation of a Boiling Water Power Reactor—U.S.A.
Building the Geesthacht Research Reactor (1959)—Germany
Construction of the Argonne Research Reactor (1955)—U.S.A.
Construction of the Experimental Boiling Water Reactor (1957)—U.S.A.
Developing Homogeneous Reactors (1955)—U.S.A.
Dounreay Sphere, The—U.K.
EBR-I Core Disassembly After Meltdown (1958)—U.S.A.
EBR-II Fuel Cycle Development (1958)—U.S.A.
Engineering Test Reactor—Short Version (1958)—U.S.A.
Engineering Test Reactor—Long Version (1958)—U.S.A.
Experimental Boiling Water Reactor, The (1958)—U.S.A.
Experimental Breeder Reactor I Mk.III (1958)—U.S.A.
First in the World—U.S.S.R.
Homogeneous Reactor Experiment—LLI II (1958)—U.S.A.
How a Thermal Reactor Works (1955)—U.K.
Kinetic Experiment on Water Boiler (1958)—U.S.A.
Marcoule: Cité Atomique (1957)—France
Medical Research Reactor (1958)—U.S.A.
MIT Research Reactor (1958)—U.S.A.
Naval Research Laboratory Reactor (1958)—U.S.A.
Nuclear Reactors in Germany—Germany
Nuclear Reactors for Research (1955)—U.S.A.
Oak Ridge Research Reactor (1958)—U.S.A.
Organic Moderated Reactor Experiment (1958)—U.S.A.
Pile Atomique, La—France
Power Reactors—U.S.A. (1958)—U.S.A.
Research Reactors—U.S.A. (1958)—U.S.A.
Secrets d'une Pile Atomique, Les (1957)—France
Sodium Graphite Reactor Progress Report (1955)—U.S.A.
Sodium Reactor Experiment (1958)—U.S.A.
Sodium Reactor Experiment Fabrication (1957)—U.S.A.
SPERT-I: Experiments in Nuclear Reactor Safety (1958)—U.S.A.
TRIGA—U.S.A.
Vallecitos Boiling Water Reactor (1958)—U.S.A.
Vers l'age Atomique (1958)—France
Zero Power Reactor III (1958)—U.S.A.

SAFETY, HEALTH HAZARDS, ETC.

Atom and the Weather, The—U.S.A.
Atomic Apothecary, The—U.S.A.
Atomic Cities—U.S.A.
Atomic Detective—U.S.A.
Atomic Pharmacy, The—U.S.A.
BEPO Wigner Energy Release—U.K.
Cobalt-60 Reloading (1958)—U.S.A.
Criticality (1957)—U.K.

SAFETY, HEALTH HAZARDS, ETC.—*continued*

EBR-I Core Disassembly After Meltdown (1958)—U.S.A.
Exercise Mermaid—U.K.
Fundamentals of Radiac Instruments—U.S.A.
Handling and Measurement of Radioactive Isotopes for Clinical Use, The—U.K.
Human Radioactivity Measurements (1958)—U.S.A.
Inside the Atom (1948)—Canada
Ionizing Radiations in Humans (1958)—U.S.A.
Kinetic Experiment on Water Boiling (1958)—U.S.A.
Living with Radiation (1958)—U.S.A.
Lubricants in Nuclear Power Stations—U.K.
Master Slave, The—U.S.A.
Matter of Contamination, A (1958)—U.K.
Occupational Health Problems—U.S.A.
Passage Interdit: La Contamination Radioactive (1958)—France
Personnel Protection in Toxic Areas—U.K.
Practice of RAF Radiological Safety (1952)—U.S.A.
Primer on Monitoring—U.S.A.
Principles of Radiological Safety (1952)—U.S.A.
Properties of Radiation (1952)—U.S.A.
Practical Procedures of Measurement (1952)—U.S.A.
Protecting the Atomic Worker—U.S.A.
Radiochemical Techniques—Part I (Alpha)
Part II (Beta and Gamma)—U.K.
Research Reactors Safety Device (1958)—U.S.A.
Safety aspects of Experiments with a Boiler Reactor (1955)—U.S.A.
SPERT-I: Experiments in Reactor Safety Nuclear (1958)—U.S.A.

SCIENTISTS

Atoms for Industry (Sir Christopher Hinton)—U.K.
Rutherford, Lord, OM, FRS (1955)—U.K.
Yukawa Story, The—U.S.A.

URANIUM

See also under "FUEL PRODUCTION AND PROCESSING"
Atomic Goldrush—U.S.A.
Energie Atomique (1956)—France
Giant to Earth—U.S.A.
Microdeformation of Uranium (1958)—U.S.A.
Naissance d'Une Usine (1958)—France
Petrified River, The—U.S.A.
Gaseous Diffusion—U.S.A.
Portsmouth Story, The—U.S.A.
Search, The: Uranium Prospecting and Mining—U.S.A.
Uranium-235—France
Uranium: From the Ore to the Metal (1958)—France
Uranium Français (1958)—France

FOOTAGE

The following lengths of film, taken from newsreels, can be bought from the British Commonwealth International News Agency Ltd., School Road, London, N.W.10 :—

		ft	Cat. No.
ZETA—Zero Energy Thermonuclear Assembly	16mm	178	3280
Windscale—The Fight Against Radiation	16mm	279	3733
Nuclear Reactor	35mm	150	4308
The Goliath Crane	16mm	50	4567
Nuclear Power Station—Berkeley, Glos.	16mm	56	7916
American Atom Engine Experiments ..	16mm	40	9639
First Pictures of Hinkley Point	35mm	150	10059
Dungeness Nuclear Power Station Site ..	16mm	23	11286
Nuclear Research Exhibition	16mm	35	11478
Dounreay	16mm	154	0375
Springfields	16mm	95	0438

NEWSREELS

The following newsreels and magazine films contain matter on nuclear energy subjects and can be hired or borrowed from the addresses given:—

Unilever Magazine No. 1—*16/35 mm. 21 min.* This Atom Age.
Unilever Ltd., Unilever House, London, E.C.

Newsreels U.S.S.R. Today—No. 7/56. *16 mm. 12 min. Lenin* the Atom Icebreaker.
Plato Films Ltd., 18, Greek Street, London, W.1.

Newsreels U.S.S.R. Today—No. 54. Medical Uses of Radio-Cobalt.
Plato Films Ltd., 18, Greek Street, London, W.1.

Indian News Review No. 94. *16 mm.* Prime Minister Visits Atomic Reactor.
Information Service of India, High Commission of India, Aldwych, London, W.C.2.

FILM DESCRIPTIONS

Mechanical details and contents of over 200 films are described. The names of producers and distributors for non-commercial screenings of each film are also given. Addresses of the distributors will be found on pages 22-23. Many of the films are available in language versions other than those listed. Details can be obtained from the distributors

A IS FOR ATOM
16 mm. Sound. English, French, Spanish and German. Colour. 15 min.

A partly animated film explaining atomic structure and fission and the peaceful uses of atomic energy. Nuclear plant and equipment are illustrated.

Produced by the General Electric Company, U.S.A. 1955.

Available from the producer, or U.S. Atomic Energy Commission offices, free; in the U.K., from the COI Central Film Library, London, or International General Electric, London, free; in Europe, from International General Electric, Paris, free.

ADVENTURES IN METALLURGY
16 mm. Sound. English. Colour. 22 min.

This film is a study of the room temperature deformation and fracture in uranium as seen in the optical microscope. Strain energy accelerates the formation of uranium oxide film on the specimen's surface. As a result the microstructure is revealed by interference colours which facilitate interpretation. This film is similar to the 17 min film " Microdeformation of Uranium."

Produced by Hanford Atomic Products Operation, General Electric Co., Richland, Washington, 1957

Available from the producer and U.S. Atomic Energy Commission offices, free; from Byron Inc., sale.

AGRICULTURE, INDUSTRY AND POWER
16 mm. Sound. English. Black and white. 21 min.

One of the " Atoms for Peace " series, this describes research in the uses of radioactive materials in agricultural and industrial production.

Produced by the U.S. Information Agency.

Available from U.S. Atomic Energy Commission offices, free loan; from United World Films, Inc., New York, sale; in the U.K. from COI Central Film Library, London, and Scottish Film Board Council, Glasgow.

ANOTHER NAME FOR POWER
16/35 mm. Sound. English. Colour. 23 min.

Made for showing to stockholders of Associated Electrical Industries, Ltd., this film covers the diverse range of activities carried out by the companies that fly the AEI banner. In the nuclear field, construction of the MERLIN reactor at Aldermaston and operation of the SCEPTRE thermonuclear assembly are shown, together with shots taken at the Berkeley nuclear power station. There are also visits to the Metropolitan-Vickers irradiation centre and toxic metals laboratory at Manchester.

Produced for AEI, Ltd., by Ronald H. Riley in association with the Film Producers Guild, 1959.

Available from AEI, Ltd., London.

THE ARGONAUT
16 mm. Sound. English. Colour. 15½ min.

Design features, operation and some of the applications of Argonne National Laboratory's Nuclear Assembly for University Training are described. The need for such a reactor is outlined, together with the part it plays in the syllabus of the International School of Nuclear Science and Engineering at Argonne.

Produced by the Argonne National Laboratory, 1957.

Available from U.S. Atomic Energy Commission offices and the producers, free; from Byron, Inc., Washington, sale; in the U.K. from USAEC office, London.

ARGONNE GAMMA IRRADIATION FACILITY
16 mm. Sound. English. Colour. 20 min.

The Argonne Gamma Irradiation Facility utilizes the radiation from fission products to provide a gamma irradiation flux of up to 2m. roentgens/hr for research purposes. Irradiation service is made available to private and governmental research organizations. This film shows how the intense gamma rays from spent fuel elements removed from the Materials Testing Reactor are used. The arrangement for handling the elements and samples to be irradiated are described and there are pictures of results of typical food irradiation studies.

Produced by Argonne National Laboratory, 1957.

Available from the producers and U.S. Atomic Energy Commission offices, free: from Byron Inc., sale.

ARMOUR RESEARCH REACTOR
16 mm. Sound. English. Colour. 16½ min.

Design, fabrication and operation of the first privately-owned nuclear energy reactor designed specifically for industrial research—the 50,000w solution type reactor built by Atomics International for the Armour Research Foundation, Chicago.

Produced by Atomics International, California, 1958.

Available from U.S. Atomic Energy Commission headquarters and field libraries or the producers, free; in the U.K. from the USAEC office, London.

THE ATOM AND AGRICULTURE
16 mm. Sound. English. Black and white. 12 min.

This explains the areas in which radiation (including radioisotopes and atom tracers) can be used in agriculture: " tagged " fertilizer studies, photosynthesis research, irradiation of corn and other crops, the effects of radiation on plant chromosomes, etc.

Produced by Encyclopaedia Britannica Films, Inc.

Available from the producers or from U.S. Atomic Energy Commission offices.

THE ATOM AND BIOLOGICAL SCIENCE
16 mm. Sound. English. Black and white. 12 min.

The film identifies and illustrates the uses of radioactivity in several areas of biology: the effects of radiation on growth and heredity of plants and animals; tracer studies; photosynthesis studies; and the measures taken to protect investigating scientists.

Produced by Encyclopaedia Britannica Films, Inc., Wilmette, Inc., Illinois.

Available from U.S. Atomic Energy Commission offices, free; from the producers, sale.

THE ATOM AND THE DOCTOR
16 mm. Sound. English. Black and white. 12½ min.

One of " The Magic of the Atom " series. It shows the application of radioisotopes in medicine for the diagnosis and

treatment of certain diseases. One sequence was shot at the Oak Ridge Cancer Research Hospital. Intended for technical audiences.

Produced by the Handel Film Corporation, Inc., Hollywood, California.

Available on sale from the producer; limited loan from U.S. Atomic Energy Commission offices.

THE ATOM AND YOU

16 mm. Sound. English. Black and white. 16 min.

A consolidation of three newsreel releases based on stock footage taken at U.S. Atomic Energy Commission installations and covering the uses of radioisotopes in biology, medicine, agriculture and industry, and the development of nuclear energy power.

Produced by Paramount News, U.S.A.

Available from Paramount News, Inc., New York.

THE ATOM AND THE WEATHER

16 mm. Sound. English. Black and white. 12½ min.

One of "The Magic of the Atom" series, this shows the relationship between the weather and nuclear energy—weather information helps men working in the nuclear energy field to protect the public; radioisotopes can help the meteorologist. Weather installations at various U.S. Atomic Energy Commission plants are shown in the film and one sequence shows how smoke is used at the Brookhaven National Laboratory to trace wind currents before radioactive stack gases are released to the atmosphere.

Produced by Handel Film Corporation, Inc, Hollywood, California

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

THE ATOM GOES TO SEA

16 mm. Sound. English. Black and white. 12 min.

The description of experimental work on and subsequent research and development work on nuclear powered submarines.

Produced for the General Electric Company, New York, by Sutherland Productions, Hollywood, California.

Available from GEC film laboratories and U.S. Atomic Energy Commission offices, free.

THE ATOM ICEBREAKER

A film about the Russian nuclear-powered icebreaker *Lenin*. The film was shown at last year's Conference on the Peaceful Uses of Atomic Energy at Geneva.

Further details can be obtained from the Soviet Film Information Office, London.

THE ATOM IN INDUSTRY

16 mm. Sound. English. Black and white. 12½ min.

One of "The Magic of the Atom" series, it deals with the industrial applications of nuclear energy; the use of radioisotopes in the factory; thickness gauges; weld testing, etc. How a nuclear power plant works is explained.

Produced by the Handel Film Corporation, Inc., Hollywood, California.

Available on sale from the producer; limited loan from U.S. Atomic Energy Commission offices.

ATOM SMASHERS

16 mm. Sound. English. Black and white. 12½ min.

One of the films in "The Magic of the Atom" series, it explains the principles of particle accelerators and shows examples of the cyclotron, synchrotron and cosmotron in operation.

Produced by Handel Film Corporation, Inc., Hollywood, California.

Available for sale from the producer; on limited loan from U.S. Atomic Energy Commission field offices.

ATOMIC ACHIEVEMENT

16/35 mm. Sound. English commentary. Colour. 20 min.

An account of Britain's nuclear power programme illustrated with visits to Calder Hall nuclear power station, the Atomic Energy Research Establishment, Harwell, the UKAEA factories at Springfields, Capenhurst and Windscale, and to the site of the fast breeder at Dounreay. How a nuclear reactor works is explained with the aid of animated drawings.

Produced for the COI by Rayant Films, Ltd., London (Cat. No. UK1501).

Available from the COI Central Film Library (Cat. No. UK1501). Hire, 20s.

A IS FOR ATOM —ATOMIC DETECTIVE

ATOMIC AGE FARMER

16 mm. Sound. English. Black and white. 12½ min.

One of "The Magic of the Atom" series, it discusses the advances made in agriculture through the use of radioisotopes. The study of the effect of radiation on corn and of the life processes of livestock and the production of radioactive compounds are covered. Intended for non-technical audiences.

Produced by the Handel Film Corporation, Inc., Hollywood, California.

Available on sale from the producer; limited loan from U.S. Atomic Energy Commission offices.

THE ATOMIC ALCHEMISTS

16 mm. Sound. English. Black and white. 12½ min.

One of "The Magic of the Atom" series. It illustrates the part played by chemistry in the development of nuclear energy and also the part played by nuclear energy in chemistry: the effects of radiation on liquids and solids, and the search for new elements.

Produced by the Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices (limited loan); from the producers, sale.

THE ATOMIC APOTHECARY

16 mm. Sound. English. Black and white. 38 min.

A birdseye review depicting research in radioactive dust, calcium absorption in animals and effect of radioiodine in their diet, use of astatine, effect on blood flow, oxygen tension studies, radioactive iron in bone marrow, arterio-sclerosis, use of cystine and certain preventive measures against occupational hazards.

Produced by the Medical Film Guild, New York.

Available from the producer, on loan or sale.

ATOMIC BIOLOGY FOR MEDICINE

16 mm. Sound. English. Black and white. 12½ min.

One of "The Magic of the Atom" series, this film discusses the wide range of biomedical research that helps in the determination of the effects of radiation on tissue which provides data potentially useful for the medical practitioner profession. Illustrated are: inhalation tests made with animals at the examination of the eyes of mice for effects of radiation; and studies on the effects of radiation on cell division, bones, tumours and other tissues.

Produced by the Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

ATOMIC CITIES

16 mm. Sound. English. Black and white. 12½ min.

One of "The Magic of the Atom" series, this illustrates the steps taken for the safety of the public and for workers in the area of nuclear installations. Shown are various environmental monitoring techniques (sampling, vegetation, soil and air in the vicinity, dust sampling in the plants, waste disposal research, etc.).

Produced by Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

ATOMIC DETECTIVE

16 mm. Sound. English. Black and white. 12½ min.

One of "The Magic of the Atom" series, this describes various types of radiation detection and monitoring devices and illustrates how these are used in industry, hospitals, research laboratories, and for uranium prospecting. A small unit is assembled.

Produced by Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

ATOMIC ENERGY

16 mm. Sound. English commentary. Black and white. 11 min.

An explanation of the principles underlying the release of atomic energy. Animated diagrams and photographs describe the structure of the atom, mass-energy relationship, and the methods of atomic energy release by nuclear synthesis, natural radioactivity, and nuclear fission. Graphs and diagrams illustrate the relationship between atomic energy from the sun and chemical energy stored and released in photosynthesis and combustion.

Produced by Encyclopaedia Britannica Films, Inc. U.S.A., 1947.

Available in the United Kingdom from Gaumont British Film Library (Cat. No. F.3864), hire, 10s.; sale, £16.

ATOMIC FURNACES

16 mm. Sound. English. Black and white. 12½ min.

One of the films in "The Magic of the Atom" series, it explains the principles of a nuclear reactor and shows United States Atomic Energy Commission installations at Los Alamos, Brookhaven and Oak Ridge in operation. Intended for non-technical audiences.

Produced by the Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

ATOMIC GOLDRUSH

16 mm. Sourd. English. Black and white. 12½ min.

One of "The Magic of the Atom" series, this shows prospecting by aeroplane and on foot for uranium deposits, staking a claim, core drilling to determine the grade of ore body, the examination of the cores at a laboratory, and finally the mining of the ore.

Produced by Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

THE ATOMIC GREENHOUSE

16 mm. Sound. English. Black and white. 12½ min.

One of "The Magic of the Atom" series, it illustrates the process of using radioisotopes to trace fertilizers absorbed from the soil into a plant, the purpose of which is to determine more efficient uses of fertilizer. Intended for non-technical audiences.

Produced by the Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

ATOMIC METALLURGY

16 mm. Sound. English. Black and white. 12½ min.

One of the films in the series "The Magic of the Atom," it shows the preparation and testing of alloys used in nuclear power reactors. Intended for non-technical audiences.

Produced by Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

THE ATOMIC PHARMACY

16 mm. Sound. English. Black and white. 12½ min.

One of "The Magic of the Atom" series, it shows the handling by remote control of highly radioactive liquid materials and the preparation and despatch of an urgent order for a radioisotope. Suitable for non-technical audiences.

Produced by Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

ATOMIC POWER AT SHIPPINGPORT

16 mm. Sound. English. Colour. 30 min.

A description of America's first full-scale nuclear power plant designed exclusively for the generation of electricity for civilian use. Design problems and how they were solved are shown, together with construction and operation details, methods of cycling the light water coolant, fabrication characteristics and placement of fuel elements, etc.

Produced for the Westinghouse Electric Corporation by Audio Productions, New York, 1958.

Available from the U.S. Atomic Energy Commission headquarters and field libraries, free; in the U.K. from the USAEC office, London.

ATOMIC PHYSICS

16/35 mm. Sound. English, Dutch, French and Spanish. Black and white. 88 min.

Divided into five parts, this film traces the history and development of current conceptions on the nature of matter and structure of the atom. Eminent scientists, including Sir John Cockcroft and the late Professor Einstein, appear in the film and there are comments by Lord Rutherford and Sir J. J. Thomson. The film has received several international awards.

Part I—The Atomic Theory (*11 min.*) starts with the theory as proposed by John Dalton in 1808 and outlines the progress of the nineteenth century, bringing in Faraday's early experiments in electrolysis and ending with ideas on the size of molecules and atoms then current.

Part II—Rays from the Atoms (*13 min.*) demonstrates how cathode rays were investigated and electrons discovered; how positive rays were found and their nature established; and how X-rays were found and quickly put to use.

Part III—The Nuclear Structure of the Atom (*20 min.*) reconstructs the early work of Becquerel and the Curies on radioactivity and shows how Lord Rutherford's work in this field led to his theory on the structure of the atom. H. G. Moseley's work in support of this theory is shown visually by animated diagrams.

Part IV—Atom Smashing—the Discovery of the Neutron (*21 min.*) describes the work of the Joliot-Curies and Sir James Chadwick and there are sequences on the splitting of the lithium atom by Cockcroft and Walton and an explanation of this by Einstein.

Part V—Uranium Fission—Atomic Energy (*23 min.*). This deals with the events that led up to the discovery of uranium fission and explains this phenomenon in great detail. Work on the atom bomb is covered, followed by shots of the ruins of Hiroshima. The film ends with a recapitulation of what has been shown and a word about the future.

Produced by J. Arthur Rank, Ltd., U.K., 1948.

Available in the United Kingdom from G.B. Film Library (Cat. Nos. F.4580, F.4598, F.4599, F.4600 and F. 4601), hire or sale, separately or together.

ATOMIC RESEARCH: AREAS AND DEVELOPMENTS

16 mm. Sound. English. Black and white. 12 min.

Research into the energy applications of nuclear fission, into the structure of matter, and into the by-products of nuclear fission are covered. The workings of a nuclear power reactor are explained; particle accelerators are illustrated in action; the use of radioisotopes in medicine, biology, agriculture and industry are discussed.

Produced by Coronet Instructional Films, Chicago, Illinois.

Available from U.S. Atomic Energy Commission offices, free; from the producers, sale.

THE ATOMIC ZOO

16 mm. Sound. English. Black and white. 12½ min.

One of "The Magic of the Atom" series, it depicts experiments with sheep, fowl and fish to determine the effect of radiations on livestock and shows how nuclear energy can be used in improving animal economics. Suitable for non-technical audiences.

Produced by the Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

ATOMS AT WORK

16/35 mm. Sound. English. Black and white. 11 min.

The constructive uses of nuclear energy in medicine, industry, agriculture and scientific research are covered.

Available from the COI Central Film Library, London.

ATOMS FOR HEALTH

16 mm. Sound. English. Black and white. 12½ min.

One of "The Magic of the Atom" series, this shows two examples of how nuclear energy can be used in medical diagnosis and treatment. The first example is of diagnosing a liver complaint with the use of a radioisotope and the second of the use of a cobalt source in treating patients for cancer.

Produced by Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

ATOMS FOR INDUSTRY
16/35 mm. Sound. English. Black and white. 14 min.
A discussion between Canadian-born television commentator Robert McKenzie and Sir Christopher Hinton, FRS, formerly managing director of the UKAEA Industrial Group, on the development of nuclear power in the United Kingdom. Sir Christopher explains the working of Calder Hall nuclear power station.
Produced for the Foreign Office by World Wide Pictures, Ltd., London, with the COI, 1955.
Available from the COI Central Film Library (Cat. No. UK1399). Hire, 10s.

ATOMS FOR PEACE
16 mm. Sound. English. Black and white. 17 min.
This is made up of scenes from the films "The Atom and You" and "The Atom and Industry," together with additional material from U.S. Atomic Energy Commission and United States Information Agency film stock. The entire range of uses of nuclear energy in industry, biology, medicine and agriculture is covered and there is an outline of the possibilities of nuclear power.
Produced through the co-operation of the U.S. Atomic Energy Commission, the U.S. Information Agency and Encyclopaedia Britannica Films, Inc., Wilmette, Illinois.
Available from U.S. Atomic Energy Commission headquarters and field offices.

ATOMS FOR PEACE
16/35 mm. Sound. Russian and English. Colour. 70 min.
A survey of Soviet achievements in the field of nuclear energy. It is prefaced with a definition of atomic energy and radioactivity through the use of animated drawings. The following sequences describe the uses of radioisotopes in medicine, agriculture and industry. The work of the Institute of Nuclear Problems is covered and there are shots of a proton synchrotron in use. Various types of nuclear reactors are shown and there are references to the nuclear-powered icebreaker *Lenin*.
Produced in Russia, 1956.
Available in the U.K. from Plato Films, Ltd. Hire, 40s.

ATOMS FOR PEACE
16 mm. Sound. English. Black and white. Series.
This is the general title of a series of films in which technical, economic and political aspects of the peaceful uses of nuclear energy are covered. Details of the films can be found under the following entries:
Introducing the Atom
Medicine
Agriculture, Industry and Power
Scientific Advancement
Working Together
Training Men for the Atomic Age
Produced by the U.S. Information Agency, 1955.
Available from U.S. Atomic Energy Commission offices, free; United World Wide Films, Inc., New York, sale.

L'AUBE D'UNE MONDE
16/35 mm. Sound. French. Colour. 25 min.
The story of the early days of nuclear energy development in France. The commentary is written and spoken by the distinguished poet, artist, writer and film director, Jean Cocteau.
Produced with the support of the Commissariat a l'Energie Atomique by Arc-en-Ciel, Paris, 1956.
Available from the Commissariat a l'Energie Atomique; in the United Kingdom from the French Institute.

BEPO WIGNER ENERGY RELEASE
16/35 mm. Sound. English. Black and white. 14 min.
This shows the preparation and procedure adopted for releasing Wigner energy in a graphite moderated pile.
Produced by the AERE Film Unit, Harwell.
Available from the producers, free.

BORAX: CONSTRUCTION AND OPERATION OF A BOILING WATER POWER REACTOR
16 mm. Sound. English. Black and white. 14 min.
This film may be considered as a sequel to the "Safety Experiments with a Boiling Reactor," for as a result of the experiments carried out on the reactor depicted in that film, a boiling water reactor was built and connected to an electricity generating system. Electricity produced from BORAX was used for supplying lighting and power to the city of Arco, Idaho, for one hour on July 17th, 1955. The film shows the construction of the reactor power plant and the lighting up of the city.
Produced by U.S. Air Force Lookout Mountain Laboratory, 1955.
Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

ATOMIC ENERGY —COBALT-60 RELOADING

BRADWELL
35 mm. 16/35 mm. Sound. English. Colour. 23 min.
A review of the first 15 months' work on the construction of the nuclear power station at Bradwell, Essex.
Produced for the Nuclear Power Plant Co., Ltd., by Verity Films, Ltd., London.
Available from the NPPC, free.

BUILDING FOR ATOMIC ENERGY
16 mm. Sound. English. Colour. 21 min.
The construction of the Savannah River heavy water and plutonium producing plant of the United States Atomic Energy Commission is shown.
Produced for the Savannah River Plant by E. I. du Pont de Nemours, operating contractor of the plant, 1958.
Available from the Savannah River Plant and U.S. Atomic Energy Commission offices, free.

BUILDING OF THE GEESTHACHT RESEARCH REACTOR
Scheduled for completion by May, 1959, this film shows the various stages in the construction of the swimming pool reactor at Geesthacht.
Details can be obtained from the Scientific Film Institute, Gottingen, West Germany.

CALDER HALL
16/35 mm. Sound. English and French. Colour. 30 min.
This is a progress report on the construction of Calder Hall nuclear power station, made for showing at the First International Conference on the Peaceful Uses of Atomic Energy, Geneva, 1955. Stages up to three-quarter completion are filmed.
Produced for the UKAEA by Ace, London, 1955.
Available from the COI Central Film Library (Cat. No. UK1400). Hire, 30s.

CANADA'S ATOM GOES TO WORK
16/35 mm. Sound. English. Black and white. 11 min.
A progress report on work carried out at the Chalk River nuclear energy plant, Ontario, Canada. Constructive application of nuclear energy in medicine (including Canada's celebrated "cobalt bomb" for cancer treatment), industry and agriculture are shown. Shots of the NRX are included and there is a brief survey of nuclear research carried out in Canadian universities.
Produced by the National Film Board of Canada, 1952.
Available from the producer and Canadian Government diplomatic and trade posts throughout the world; in the United Kingdom from the COI Film Library, London, and the Scottish Film Council, Glasgow.

CHROMOSOME LABELLING BY TRITIUM
16 mm. Sound. English. Colour. 15 min.
Advantages of tritium over other radioisotopes as a labelling material in autoradiography.
Produced for the U.S. Atomic Energy Commission by the Jam Handy Organization, Detroit, 1958.
Available from U.S. Atomic Energy Commission offices, free; in the U.K. from the USAEC office, London.

COBALT-60 RELOADING
16 mm. Sound. English. Colour. 8 min.
The unloading of the cobalt-60 capsule from the Materials Testing Reactor at the National Reactor Testing Station,

Idaho, is described. Monitoring and packing it for shipment and the subsequent loading of the capsule into a teletherapy machine at the Argonne Cancer Research Hospital, Chicago, are also shown.

Produced for the U.S. Atomic Energy Commission by the Jam Handy Organization, Detroit, 1958.

Available from USAEC headquarters and field offices, free; in the U.K. from the USAEC office, London.

CONSTRUCTION OF THE ARGONNE RESEARCH REACTOR

16 mm. Sound. English. Black and white. 12½ min.

This film shows some of the important stages in the construction of CP-5, the Argonne Research Reactor, which is a heavy water reactor operating at a normal power level of 1,000 kW.

Produced by the Argonne National Laboratory, Lemont, Illinois, 1955.

Available from the producer and U.S. Atomic Energy Commission offices, free.

THE CONSTRUCTION OF CALDER HALL

16/35 mm. Sound. English. Black and white. 40 min.

The techniques of building a nuclear reactor for power production. Operations shown include preparation of the site and placing the concrete for the foundations of the reactor building; placing in position of the 8 ft thick concrete roof; laboratory tests on site to ensure that the concrete conforms to the requisite high standard; and the accurate placing of the concrete around the many charge tubes and ducts. A useful film for civil and mechanical engineers and for those taking appropriate university and technical college courses.

Produced for the UKAEA by Ace, London.

Available from COI Central Film Library (Cat. No. UK2116), or Ace Distributors, Ltd., free.

CONSTRUCTION OF THE EXPERIMENTAL BOILING WATER REACTOR

16 mm. Sound. English. Black and white. 10 min.

A description of the highlights of the construction of the Experimental Boiling Water Reactor buildings, particularly of the containment shell for the power plant. The erection of the steel shell, special concrete work, and installation of equipment, including the reactor pressure vessel, are shown.

Produced by Argonne National Laboratory, 1957.

Available from the producer and U.S. Atomic Energy Commission, free, from Byron, Inc., sale.

CONQUEST OF THE ATOM

16/35 mm. Sound. English. Colour. 22 min.

This film tells the fascinating story that led to the achievement of nuclear fission. Starting with J. J. Thomson's experiments that proved that an atom consisted of electrons and positive particles, it deals with Rutherford's work that culminated in the splitting of the nitrogen nucleus, and shows Sir John Cockcroft explaining how he and his colleague Dr. Walton succeeded in splitting the lithium atom by proton bombardment. It continues with Sir James Chadwick's discovery that the atom nucleus consisted of both protons and neutrons, and shows how nuclear fission was finally achieved in 1938 when the uranium atom was split by neutron bombardment.

Produced by the Realist Film Company, London, with the Educational Foundation for Visual Aids and Mullard, Ltd.

Available from Foundation Film Library, hire, 30s.

CRITICALITY

16/35 mm. Sound. English, German and Spanish. Colour. 24 min.

The film describes the conditions which produce criticality and the methods used for controlling them. Though made primarily as a safety training film for use in nuclear energy establishments, this film gives a clear exposition of some elements of nuclear theory and forms a valuable introduction to the subject. The film has won several international awards.

Produced for the UKAEA by G. Buckland Smith in association with the Film Producers Guild, London, 1957.

Available from the UKAEA, London, or COI Central Film Library (Cat. No. UK2120), free.

CYCLOTRON IRRADIATION OF THE PITUITARY

16 mm. Sound. English. Colour. 15 min.

This is a semi-technical film describing the research studies carried out at the Donner Laboratory, University of California, on the control of advanced metastatic breast carcinoma by means of pituitary irradiation, using a 184 in. cyclotron.

Produced for the Donner Laboratory, California University, by Hatfield-Ingraham Films, San Francisco, 1958.

Available to qualified medical and allied professional groups only from U.S. Atomic Energy Commission headquarters or the Donner Laboratory, free.

A DAWN'S EARLY LIGHT

16 mm. Sound. English. Colour. 40 min.

A semi-documentary account of the development of nuclear energy for submarine propulsion set against the overall background of peaceful applications of nuclear energy.

Produced for the Westinghouse Electric Corporation by Roland Reed Productions, Inc., Culver City, California.

Available from U.S. Atomic Energy Commission offices, free; from the producers, sale.

DEVELOPING HOMOGENEOUS REACTORS

16 mm. Sound. English. Black and white. 23 min.

A record of the stages in the development, construction, operation and dismantlement of the Homogeneous Reactor Experiment No. 1 at Oak Ridge National Laboratory. Testing of the most important reactor features is shown, along with the most important steps in assembling the reactor. Closing shots of the film show the reactor being dismantled to make room for HRE-2.

Produced by the Oak Ridge National Laboratory, Tennessee, 1955.

Available from the producer and U.S. Atomic Energy Commission offices, free.

THE DOUNREAY SPHERE

16/35 mm. Sound. English. Black and white. 35 min.

A record of the construction of the fast breeder reactor and its huge spherical container at Dounreay in the north of Scotland and of the unusual problems which had to be solved. A useful film for civil and mechanical engineers and for those taking appropriate courses in universities and technical colleges.

Produced for the UKAEA by Ace, London.

Available from COI Central Film Library (Cat. No. UK2119) or Ace Distributors, free.

DRESDEN NUCLEAR POWER STATION

16 mm. Sound. English. Colour. 10 min.

Construction of the 180 MW boiling water reactor power station at a site near Chicago. Fabrication of the 350-ton pressure vessel and other components are shown and there are aerial views of the site with close-ups of the construction of the 190 ft diameter containment sphere for the reactor.

Produced by the General Electric Company, San Jose, California, 1958.

Available from U.S. Atomic Energy Commission offices or from the producers, free; in the United Kingdom from International GEC of New York, office and from the USAEC office, London.

EBR-I CORE DISASSEMBLY AFTER MELTDOWN

16 mm. Sound. English. Colour. 13 min.

Major aspects of the removal and subsequent disassembly of the core of the Experimental Breeder Reactor-I, Mark II, following meltdown, are presented. The hot laboratory and the remote control techniques used to separate and recover enriched fuel from the blanket material are shown.

Produced by the Argonne National Laboratory, U.S.A., 1958.

Available from U.S. Atomic Energy Commission offices or the producers, free.

EBR-II FUEL CYCLE DEVELOPMENT

16 mm. Sound. English. Colour. 9 min.

This presents some major aspects of the development, in progress, of a completely integrated fuel cycle for the EBR-II project and includes the remote handling, refabrication and reassembly of EBR-II fuel elements.

Produced by the Argonne National Laboratory, 1958.

Available from U.S. Atomic Energy Commission offices and from the producers, free; in the U.K. from the USAEC office, London.

ENERGIE AUS MATERIE

Details from the producers, Gottinger Filmproduktion Hans Heinrich Kahl, West Germany.

ENERGIE ATOMIQUE
16 mm. Sound. French. Colour. 25 min.
A review of French uranium mines and processing plants and of nuclear energy installations. The Grury uranium extraction centre and washing plant, the chemical works at Guegnon and Bouchet, the Marcoule plutonium/power production centre and the Saclay laboratories are featured. The EL-3 pile and the G1 at Marcoule are shown, together with the Saclay cyclotron and Van der Graaf electrostatic generator.
Produced for the Commissariat de l'Energie Atomique by Galardi-Telephoto, Paris, 1956.
Available from the Commissariat de l'Energie Atomique.

ENGINEERING AT CALDER HALL
16/35 mm. Sound. English. Black and white. 38 min.
The building of the pressure vessel at the Calder Hall nuclear power station. The film shows the use of a guy derrick, 200 ft high, to lift the sections and lower them into position inside the building; welding operations both manual and automatic; and the accurate cutting of the holes for the charge tube stubs, with the associated assembly and welding techniques. In conclusion the film shows how the vessel was stress relieved and the subsequent tests, lagging, and preparations for installing the graphite core. A useful film for mechanical and civil engineers and for those taking appropriate university and technical college courses.
Produced for the UKAEA by Ace, London.
Available from COI Central Film Library (Cat. No. UK2117) or Ace Distributors, Ltd., free.

ENGINEERING FOR RADIOISOTOPES
16 mm. Sound. English. Black and white. 21½ min.
The film describes the chemical, mechanical, electrical and constructional engineering skill required to put production and processing of radioisotopes on an efficient, industrial basis.
Produced by the Oak Ridge National Laboratory, U.S.A.
Available from U.S. Atomic Energy Commission offices, free.

ENGINEERING TEST REACTOR (Short version)
16 mm. Sound. English. Colour. 14 min.
Design and erection of the Engineering Test Reactor at the National Reactor Testing Station, Idaho. The subject matter is similar to that in the slightly longer film of the same title made by the United States Air Force Lookout Laboratory.
Produced for Kaiser Engineers, Oakland, California, by Palmer Films, Inc., San Francisco, 1958.
Available from U.S. Atomic Energy Commission offices, free; in the U.K. from the USAEC office, London.

ENGINEERING TEST REACTOR
16 mm. Sound. English. Black and white. 22 min.
The design, construction and operation and some of the uses of America's largest and most advanced nuclear test facility are discussed. Among the uses to which the ETR is put are the testing of the effects of intense radiation on the engineering components of reactors under design.
Produced for the Idaho Operations Office of the U.S. Atomic Energy Commission by the U.S. Air Force Lookout Mountain Laboratory, Hollywood, 1958.
Available from U.S. Atomic Energy Commission headquarters and field libraries, free; in U.K. from the USAEC office, London.

THE ETERNAL CYCLE
16 mm. Sound. English. Black and white. 12½ min.
One of " The Magic of the Atom " series, it shows how the products of nuclear energy are used for biological research. The use of radioactive materials to trace the soil-plant-animal-soil cycle taken by foods is demonstrated.
Produced by the Handel Film Corporation, Inc., Hollywood, California.
Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

EXERCISE MERMAID
16/35 mm. Sound. English. Black and white. 15 min.
Survey teams from the Atomic Energy Research Establishment, Harwell, carry out investigations into the dispersal of radioactive substances off the Dorset coast. Emphasis is placed on the safety of local fishing industries and on shore contamination.
Produced by the AERE Film Unit, Harwell.
Available from the producers, free.

CONSTRUCTION OF THE ARGONNE RESEARCH REACTOR —FUNDAMENTALS OF RADIAC INSTRUMENTS

THE EXPERIMENTAL BOILING WATER REACTOR
16 mm. Sound. English. Colour. 30 min.
An account of the construction and operation of the EBWR at Argonne. It begins with the installation of the reactor components, with pressure vessel and other units in the steam cycle already in place. The standard operational procedures of the plant are included and there are shots of various engineering tests and of the inspection procedures.
Produced by the Argonne National Laboratory, U.S.A., 1958.
Available from U.S. Atomic Energy Commission headquarters and field offices and the producers, free; from Byron, Inc., Washington, sale; in the U.K. from the USAEC office, London.

EXPERIMENTAL BREEDER REACTOR I, Mark III
16 mm. Sound. English. Colour. 13½ min.
This presents some major aspects of the fabrication, installation and operation of a new core (Mark III) for the Experimental Breeder Reactor I at the National Reactor Testing Station.
Produced by the Argonne National Laboratory, Lemont, Illinois, 1958.
Available from U.S. Atomic Energy Commission headquarters and field libraries and the producers, free; in the U.K. from the USAEC office, London.

FABRICATION OF RESEARCH REACTOR FUEL ELEMENTS
16 mm. Sound. English. Colour. 20 min.
The alloy and powder metallurgy methods of fabricating research reactor fuel elements.
Produced by the U.S. Atomic Energy Commission Oak Ridge National Laboratory, 1958.
Available from the producer and U.S. Atomic Energy Commission offices, free.

FAST REACTOR PROGRAMME
16 mm. Sound. English. Colour. 36 min.
An abstract of some of the major features of the fast reactor programme in the areas of reactor performance, safety and reliability, system components and fuel cycle developments.
Produced by the Argonne National Laboratory, U.S.A., 1958.
Available from U.S. Atomic Energy Commission headquarters and field libraries and the producers, free; in the U.K. from the USAEC office, London.

FIRST IN THE WORLD
16/35 mm. Sound. Russian and English. Colour. 19 min.
A short historical introduction to the atomic energy power station which has been feeding electricity into the Russian Grid since June 27th, 1954. A diagram section shows the principles behind the reactor which is using 5 per cent. U-235 enriched rods. The steel sleeves surrounding the fuel and the water circulating through these, the boron carbide control rods, and finally the two closed circuits with the heat exchanger and conventional 5 MW generating plant are also explained. The film then shows the units in operation; the replenishing of the reactor (once every 100 days); the safety devices and the protection of the workers.
Produced by the Moscow Popular Science Studios, 1955.
Available in the U.K. from Plato Films, Ltd., hire, 15s.

FIRST IN THE WORLD
16 mm. Sound. English, Spanish and German. Colour. 20 min.
A progress report on the construction of Berkeley nuclear power station from January, 1957, until March, 1958.
Produced for the AEI-John Thompson Nuclear Energy Co., Ltd., 1958.
Available from the AEI-John Thompson Nuclear Energy Co., Ltd., free.

FUNDAMENTALS OF RADIAC INSTRUMENTS
16 mm. Sound. English. Black and white. 25 min.
This reviews basic atomic theory, including composition of the atom, how radiation is caused, types of radiation, and how

radiation causes ionization. Explains specific radiac instruments, including such accumulation devices as film badge, film ring, pocket dosimeter and pocket chamber; and intensity devices such as scintillation detector, ionization chamber, proportional counter and Geiger-Mueller counter.

Produced for the U.S. Army

Available from United World Films, Inc., New York, sale.

FUNDAMENTALS OF RADIOACTIVITY

16 mm. Sound. English. Black and white. 50 min.

One of "The Radioisotope" series, it traces uranium from prospector to the U.S. Atomic Energy Commission. Shows how uranium changes into other elements through radioactive decay and through nuclear fission. Mention is made of Einstein's equation $E=mc^2$, the atomic bomb, and use of nuclear power for industry. Stable and radioactive isotopes are explained, with isotope charts and energy level diagrams used to illustrate decay. Various radiations resulting from nuclear changes are described in detail. The nuclear reactor is described in terms of fission and moderation. Target materials introduced into a typical nuclear reactor and withdrawn as radioisotopes, and the processing of fission products, are shown. More than 50 terms and concepts are defined and explained.

Produced for the Surgeon-General, Army by the U.S. Army Signal Corps, 1952.

Available from U.S. Army Divisional Headquarters and the U.S. Atomic Energy Commission, free; from United World Films, Inc., sale.

THE FUTURE IS ELECTRIC

16/35 mm. Sound. English. Colour. 25 min.

The film points to the coincidence of the passing of the Clean Air Act with the publication of Britain's expanded nuclear power programme and shows some of the ways electricity can be used, for motive power and heating in industry, transport and the home. Intended for general audiences.

Produced for the British Electrical Development Association by Greenpark Productions, Ltd., London, 1958.

Available from the British Electrical Association, free.

GASEOUS DIFFUSION

16 mm. Sound. English. Black and white. 3 min.

This very short animated film illustrates the gaseous diffusion method for separating U-235 from U-238 as accomplished at the U.S. Atomic Energy Commission's gaseous diffusion plants at Portsmouth, Ohio; Oak Ridge, Tennessee; and Paducah, Kentucky.

Produced by the U.S. Air Force Mountain Lookout Laboratory.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

GAUGING THICKNESSES WITH RADIOISOTOPES

16 mm. Sound. English. Black and white. 4½ min.

This brief film explains how beta gauges are used for precise measurement and control of feed-back apparatus in steel, plastic, rubber and paper manufacturing.

Produced for U.S. Atomic Energy Commission by George Tressel Productions, Chicago, 1958.

Available from USAEC headquarters and field offices, free; in the U.K. from the USAEC office, London.

GIANT OF EARTH

16 mm. Sound. English. Black and white. 26 min.

The story of the exploration prospecting and mining of uranium ore on the Colorado Plateau, with an explanation of U.S. Atomic Energy Commission activities at Grand Junction, etc.

Produced by Radio/Television Station KLZ-TV, Denver, in collaboration with the Colorado Mining Association.

Available from U.S. Atomic Energy Commission offices and the Colorado Mining Association, free or sale.

GREAT DAY

16/35 mm. Sound. English, French, Spanish, Italian, Portuguese, Japanese, German and Russian. 24 min.

This is a continuation of the film "Calder Hall" and shows the completion of the world's first large-scale nuclear power station and includes a record of the opening ceremony by HM the Queen.

Produced by Ace, London, 1956.

Available from the COI Central Film Library (Cat. No. UK2510), free.

THE HANDLING AND MEASUREMENT OF RADIOACTIVE ISOTOPES FOR CLINICAL USE

16 mm. Silent. English captions. Colour. 35 min.

The radioactive isotope laboratories, and various techniques for handling and measuring radioactive isotopes are shown: these include methods of preparing isotope standards and of carrying out routine sample assays by Geiger and scintillation counting and ionization chamber methods. For the second part of the film the techniques used in a selection of clinical isotope procedures are illustrated. Methods of waste disposal are also shown.

Produced by the Physics and Medical Photography Departments of the Royal Marsden Hospital, London.

Available from Professor W. V. Mayneord, of the Royal Marsden Hospital, London, free.

HEAT EXCHANGERS AT CALDER HALL

16/35 mm. Sound. English. Black and white. 28 min.

A detailed record of the production and installation of the first heat exchangers for the Calder Hall nuclear power station. The operations shown include the transport of the sections by road; welding; lifting of the 200-ton shells from the horizontal to the vertical and their positioning on the tables; insertion of the banks of boiler tubes into the shell; and the precautions taken to prevent contamination of the reactor circuit. Animated diagrams are used to show how the coolant gas circulates between the pressure vessel and the heat exchangers. A useful film for mechanical engineers and for mechanical and civil engineering students at universities and technical colleges.

Produced for the UKAEA by Ace, London.

Available from COI Central Film Library (Cat. No. UK2118) or Ace Distributors, Ltd., free.

HIGH ENERGY PARTICLE ACCELERATORS

16 mm. Sound. English. Colour. 30 min.

A survey of the work of particle accelerators in high energy physics. Major accelerator installations in the U.S.A., either complete or under construction, are shown. The components and operations of various types of accelerators are described and there is a description of bubble chambers.

Produced for U.S. Atomic Energy Commission by Audio Productions, New York, 1958.

Available from U.S. Atomic Energy Commission headquarters and field libraries, free; from Byron, Inc., Washington, sale; in the U.K. from USAEC office, London.

HIGH ENERGY RADIATIONS FOR MANKIND

16 mm. Sound. English, French and German. Colour. 17 min.

This film shows the use of powerful industrial accelerators in the petroleum, chemical, pharmaceutical and food industries. A 10 MeV tandem Van de Graaf for physics research is demonstrated and there are sequences of a Van de Graaf being used for medical applications. The manufacturing and test facilities of the High Energy Voltage Engineering Corporation at Burlington, Massachusetts, are shown and there are references to the use of accelerators in the space age. Suitable for research, management and educational groups in chemical engineering, nuclear engineering, physics, radiography, sterilization and radiation processing fields.

Produced by the High Voltage Engineering Corporation, 1958.

Available from the producer, free; in the U.K. from High Voltage Servicing Co., Ltd., 60, Carpenters Drive, Chorley Wood, Rickmansworth, Herts; in France from Saphymo, 9, Place des Etat-Unis, Paris; and in Germany from Leybold Hochvakuum-Anlagen, G.m.b.h., Bonner Strasses 504, Koln-Baytental.

HIGH-VOLTAGE EQUIPMENT AT MOUNT VERNON HOSPITAL, NORTHWOOD

16 mm. Sound. English. Colour. 10 min.

Two machines are featured—the Canadian-built "Theratron" (a 1,000-curie radioactive cobalt unit) and a British 4m. volt linear accelerator. How they work and their principal features are described and clinical data for two treatments in progress are given. Arc therapy is featured for the "Theratron" and a fixed field treatment is shown on the linear accelerator.

Produced at the request of Professor B. W. Windeyer, Dean of the Medical School, Middlesex Hospital, and director of Mount Vernon Hospital. Enquiries for its loan should be addressed to Dr. D. E. A. Jones, chief physicist, Mount Vernon Hospital.

HOMOGENEOUS REACTOR EXPERIMENT—II
16 mm. Sound. English. Colour. 19 min.

A summary of the components, facilities and operation of the homogeneous reactor experiment-II at Oak Ridge. The reactor is a forced circulation type operating with a dilute solution of uranyl sulphate in heavy water as fuel and with heavy water as reflector.

Produced by Oak Ridge National Laboratory, Tennessee, 1958.

Available from U.S. Atomic Energy Commission offices and producers, free; in the U.K. from the USAEC office, London.

HOW A THERMAL REACTOR WORKS
16 mm. Sound. English, Italian, German and French. Colour. 7 min.

This is the animated section from " Great Day " showing, as its title indicates, how a reactor works.

Produced by Ace, London, 1955.

Available from Ace Distributors, Ltd., free.

HUMAN RADIOACTIVITY MEASUREMENTS
16 mm. Sound. English. Colour. 9 min.

This shows a method developed at Los Alamos Scientific Laboratory to monitor personnel exposed to the possible intake of gamma-emitting substances, and to study the retention and excretion of radioactive isotopes by the body.

Produced by the Los Alamos Scientific Laboratory, New Mexico, 1958.

Available from U.S. Atomic Energy Commission headquarters and field libraries, and the producers, free; in the U.K. from the USAEC office, London.

INDUSTRIAL APPLICATION OF NUCLEAR EXPLOSIVES
16 mm. Sound. English. Colour. 11 min.

Potential industrial applications of nuclear explosives are presented. It is suggested that such explosives are as safe as chemical explosives and can be used with greater effect and at less cost. Applications illustrated include harbour development, economical recovery of low grade ores, release of petroleum from oil shale, underground production of steam for power generation, and the development of large underground reservoirs in arid areas.

Produced for the University of California Radiation Laboratory, Livermore, by Palmer Films, Inc., San Francisco, 1958.

Available from U.S. Atomic Energy Commission offices, free; in the U.K. from the USAEC office, London.

THE INDUSTRIAL ATOM
16 mm. Sound. English. Black and white. 12½ min.

One of " The Magic of the Atom " series, this illustrates how industry is finding ever-increasing use for radioisotopes. The petroleum industry uses them to determine the quality of oils used in combustion engines. How leaks and obstructions in pipes can be detected with the help of radioisotopes is also shown.

Produced by Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

THE INQUIRING MIND
16/35 mm. Sound. English. Black and white 30 min.

A recruiting film, this outlines the opportunities that are available to boys and school girls for a career in the field of electrical engineering. Students are shown at work in college and then on a large engineering project. Sequences depicting the part played by electrical engineers in the design, manufacture, operation and maintenance of British equipment are included and there are sections dealing with research in this field.

Produced by Oswald Skilbeck for the Institution of Electrical Engineers.

Available from the Institution.

INSIDE THE ATOM
16/35 mm. Sound. English. Black and white. 11 min.

An explanation of nuclear energy, how it can be handled and its potential uses. Precautions taken at the Chalk River nuclear energy research centre to protect workers against radiations are illustrated and there is a glimpse into the future.

Produced by the National Film Board of Canada, 1948.

Available from the producer and Canadian Government diplomatic and trade posts throughout the world; in the U.K. from the COI Central Film Library, London, and the Scottish Film Council.

FUNDAMENTALS OF RADIOACTIVITY —KINETIC EXPERIMENT ON WATER BOILERS

INTRODUCING THE ATOM
16 mm. Sound. English. Black and white. 21 min.

This explains the nature of the atom and of atomic energy; demonstrates through animation the make-up, function, formation, and control of chain reaction; and indicates potential uses of atomic material in medicine, agriculture and industry.

Produced by the U.S. Information Agency, 1955.

Available from U.S. Atomic Energy Commission offices, free; from United World Films, Inc., New York, sale.

IODINE-131
16 mm. Sound. English. Colour. 15 min.

Diagnostic and therapeutic uses of the radioisotope iodine-131 for hyperthyoidism, thyroid cancer and heart disease.

Produced for the U.S. Atomic Energy Commission by the Jam Handy Organization, Detroit, 1958.

Available from USAEC offices, free; in the U.K. from the USAEC office, London.

IODINE AND PHOSPHORUS
16 mm. Silent. Black and white. 10 min.

A film showing the use of iodine and phosphorus isotopes for medical purposes, including the tracing of internal body movements.

Produced by Professor D. W. Smithers, of the Royal Marsden Hospital, London.

Available to qualified medical and allied professional groups only, from Professor Smithers, free.

IONIZING RADIATIONS IN HUMANS
16 mm. Sound. English. Colour. 15 min.

Design and operation of Argonne National Laboratory's whole body counter for determining identification, quantity and location of internally deposited radio-elements. Various techniques in accumulation of data, the tilting chair, one meter arc and collimating the crystal are illustrated.

Produced by the Argonne National Laboratory, 1958.

Available from U.S. Atomic Energy Commission offices and the producers, free; in the U.K. from the USAEC office, London.

LES ISOTOPES EN MEDECINE ET BIOLOGIE

Available from Service de documentation, Centre d'étude nuclear de Saclay, B.P. 2, Gif-sur-Yvette, Seine et Oise.

Enquiries for availability in United Kingdom should be addressed to the Scientific Office of the French Embassy, 22, Wilton Crescent, London, S.W.1.

ISOTOPES IN INDUSTRY
16/35 mm. Sound. English. Black and white. 10 min.

A film made for the BBC Television " Science News " series, it describes the nature of radioactivity and how it is detected. Some of the principle types of isotopes are reviewed and their uses in industry are explained.

Produced for the BBC by the Macqueen Film Organization, Ltd., 1954.

Available from the producers, hire, 10s., sale, £11 10s.

JOBS IN ATOMIC ENERGY
16 mm. Sound. English. Black and white. 12½ min.

One of " The Magic of the Atom " series, this film shows how the rapid development of nuclear energy has created a vast field of career and job opportunities. Scientists, engineers, technicians are shown at work in research, power production, agriculture, medicine, raw material production, etc.

Produced by Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

KINETIC EXPERIMENT ON WATER BOILERS
16 mm. Sound. English. Colour. 15 min.

A USAEC-sponsored study by Atomics International of the dynamic behaviour of the homogeneous solution type nuclear

reactor, demonstrating the inherent safety characteristics of this type in the event of an unforeseen release of large amounts of reactivity.

Produced for the U.S. Atomic Energy Commission by Atomics International, Canoga Park, California, 1958.

Available from USAEC headquarters and field libraries and the producers, free; in the U.K. from the USAEC office, London.

THE LINEAR ACCELERATOR

16 mm. Sound. English. Black and white. 12 min.

Modern linear accelerators provide compact high power sources of very high voltage X-rays. They enable X-ray photographs to be taken through many inches of steel using about 100th of the exposure previously required; they can be used to preserve food by the extermination of bacteria; and in the medical field they are being applied to the treatment of ma'ignant growths. The film shows how linear accelerators have developed, and explains in great detail the design and underlying theory of a modern travelling wave linear accelerator.

Produced by Halas and Batchelor Cartoon Films, Ltd., for Mullard, Ltd., and the Educational Film Foundation for Visual Aids, 1955.

Available from the Educational Foundation for Visual Aids, hire, 7s. 6d.

LIQUID SCINTILLATION COUNTING

16 mm. Sound. English. Colour. 14 min.

The use of a liquid scintillator for counting low-energy beta emitter commonly used in bio-chemical tracer work. Preparation of a sample; counting techniques.

Produced for the U.S. Atomic Energy Commission by the Jam Handy Organization, Detroit, 1958.

Available from USAEC offices, free; in the U.K. from the USAEC office, London.

LIVING WITH RADIATION

16 mm. Sound. English. Colour. 28 min.

A semi-technical documentary, this film discusses in detail the radiation safety programme of the American nuclear energy programme using the procedures at the National Reactor Testing Station, Idaho, as the typical example. Covered are: the separation—distance factor; the storage and/or dispersal of radioactive wastes; protection of populations, water, crops, and livestock by air—and environmental monitoring, and protection of workers by means of film badges, protective clothing, radiation counters, shielding, remote control devices, decontamination procedures and biochemical studies.

Produced for the U.S. Atomic Energy Commission by Lookout Mountain Laboratory, U.S. Air Force, 1958.

Available from U.S. Atomic Energy Commission offices, free; from the producer and Byron Inc., sale.

LOOP DISPOSAL

35 mm. Silent. Black and white. 20 min.

A record of the apparatus used and the techniques adopted to cut up the Mk. 1 loop from BEPO.

Produced by the AERE Film Unit, Harwell.

Available from the producers, free.

LORD RUTHERFORD, OM, FRS, DSc, ON " THE ATOM "

16 mm. Sound. English. Black and white. 10 min.

This is one of a series of films in which eminent scientists talk on subjects with which their names will always be associated.

Produced by G.B. Instructional Films in association with the Institution of Electrical Engineers, 1935.

Available in the United Kingdom from G.B. Films Library (Cat. No. F.627), hire, 10s.; sale, £12.

LUBRICANTS IN NUCLEAR POWER STATIONS

16/35 mm. Sound. English. Black and white. 10 min.

This is about the research carried out at Shell's Research Centre at Thornton, near Chester, on the oil for use in reactor blower shaft seals. The work at the centre is undertaken in close collaboration with the UKAEA.

Produced by the Shell Film Unit.

Available from the Petroleum Films Bureau, London, free.

MARCOULE: CITE ATOMIQUE

16/35 mm. Sound. French. Colour. 25 min. Shortened English version. 15 min.

Professor Frances Perrin, chairman of the Commissariat de l'Energie d'Atomiques, makes a statement on the future of nuclear energy for peaceful purposes in France. The film then shows the Commission's works at Marcoule, including construction of the reactor piles G 1 and G 3 and plutonium processing.

Produced for the Commissariat de l'Energie Atomique by the Société d'Editions Photo mecaniques, Paris, 1957.

Available from the Commissariat de l'Energie Atomique; in the United Kingdom from the French Institute, London.

THE MASTER SLAVE

16 mm. Sound. English. Black and white. 12½ min.

One of " The Magic of the Atom " series, it demonstrates various remote control apparatus for manipulating highly radioactive materials from a safe distance.

Produced by the Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

A MATTER OF CONTAMINATION

16/35 mm. Sound. English. Black and white. 10 min.

This film shows the hazards of handling radioactive substances and emphasizes the importance of understanding the principles on which contamination drills are based. Made specially for workers in nuclear energy establishments.

Produced for the UKAEA by Greenpark Productions in association with the Film Producers Guild, 1958.

Available only to organizations directly concerned with nuclear energy, from the UKAEA, London, free.

MEDICAL RESEARCH REACTOR

16 mm. Sound. English. Colour. 22 min.

This film describes the need for a reactor for medical research and then goes on to show the construction of such a reactor. Operation of the reactor and shutters controlling its neutron beams are shown with animated drawings. A neutron capture therapy experiment sequence carried out at the Brookhaven graphite reactor is also shown. The experiment can be compared with the patient treatment facility provided by the medical reactor.

Produced for the Brookhaven National Laboratory by Audio Productions, Inc., New York, 1958.

Available from U.S. Atomic Energy Commission offices or the producers, free; in the United Kingdom from the USAEC office, London.

MEDICINE

16 mm. Sound. English. Black and white. 20 min.

One of the " Atoms for Peace " series, this film shows uses of atomic materials in medical research and diagnosis; illustrates through a sequence involving a brain tumour the use of radioactive materials as tracers in the detection and location of disease; and describes atomic research in the treatment of hyperthyroidism, cancer, arterio-sclerosis.

Produced by the U.S. Information Agency, 1955.

Available from U.S. Atomic Energy Commission offices, free; from United World Films, Inc., New York, sale; in the United Kingdom from COI Central Film Library, London.

METALS OF THE NUCLEAR AGE

16/35 mm. Sound. English, French, German and Italian. Colour. 34 min.

The development of nuclear power has only been possible by an intense programme of metallurgical research into many new materials and into the behaviour of conventional materials under the unique conditions existing within the core of a reactor. The film shows the work of the Metallurgy Division at Harwell, both applied research into the development of nuclear reactors, and fundamental research into metallurgical phenomena and the physics of the solid state. Intended for scientists and engineers in industry and science students in universities and technical institutes.

Produced for the UKAEA by G. Buckland Smith, in association with the Film Producers Guild, London, 1958.

Available from the UKAEA, London, free.

METHODOLOGY

16 mm. Sound. English. Black and white. 33 min.

One of " The Radioisotope " series, this shows the early work of Hevesy in studying plant metabolism with naturally-occurring radiolead, after which it explains seven criteria for setting up a tracer experiment: (1) radiochemical purity; (2) single chemical state; (3) elimination of exchange error;

(4) knowledge of the degree to which the labelled molecules remain intact; (5) avoidance of isotope effect; (6) avoidance of chemical effects; and (7) avoidance of radiation effects. Remainder of the film illustrates relative importance of economy of time and materials and accuracy by depicting a typical biological tracer experiment from the formation of an idea to the final results.

Produced for the Army Surgeon-General by U.S. Army Signal Corps, 1952.

Available from U.S. Army Divisional Headquarters and U.S. Atomic Energy Commission offices, free; from United World Films, Inc., New York, sale.

MICRODEFORMATION OF URANIUM

16 mm. Sound. English. Colour. 17 min.

The changes in the microstructure of uranium as a result of tensile loading and thermal treatments are depicted. Formation of twin and kink bands, distortion at grain boundaries, fracturing, recrystallization, deformation due to thermal gradients, as well as microstructural changes associated with thermal cycling through the alpha to beta and the beta to gamma transformation are disclosed. The commentary discusses the microstructural changes as seen in the microscope. The film is similar to the 22-min film " Adventures in Metallurgy," but contains more technical information.

Produced by Hanford Atomic Products Operation, General Electric Company, Hanford Works, Richland, Washington, 1958.

Available from U.S. Atomic Energy Commission headquarters and field libraries, or from the producers, free; in the U.K. from the USAEC office, London.

MIT RESEARCH REACTOR

16 mm. Sound. English. Colour. 18 min.

A record of the construction of the heavy water research reactor built by ACF Industries, Inc., for the Massachusetts Institute of Technology. This is a 1,000 kW CP-5 type reactor producing fluxes in excess of 10^{13} neutrons/cm²/sec. A special medical therapy room is attached to provide a facility for medical research. The film shows construction phases of the reactor, associated nuclear equipment, containment shell and radiation shielding.

Produced for ACF Industries, Inc., by Ballanatine-Horter, Boston, Massachusetts, 1958.

Available from U.S. Atomic Energy Commission headquarters and field libraries, free; in the U.K. from the USAEC office, London.

MODIFICATION OF RADIATION INJURY IN MICE

16 mm. Sound. English. Colour. 10 min.

Effects on mice of chemical protection before radiation and bone marrow transplant after exposure. Possible implications regarding treatment of some human diseases.

Produced for the U.S. Atomic Energy Commission by the Jam Handy Organization, Detroit, 1958.

Available from USAEC headquarters and field libraries, free; in the U.K. from the USAEC office, London.

MORE POWER FROM THE ATOM

16/35 mm. Sound. English, Russian, German, French and Italian. Colour. 24 min.

A resumé of the steps taken to implement the increased British nuclear power programme, it forms a general survey of work undertaken up to August, 1958. All the stations being built in the United Kingdom at the time are shown, including the fast breeder at Dounreay. The thermonuclear apparatus ZETA is also depicted.

Produced for the UKAEA by Ace, London, 1958.

Available from Ace Distributors, Ltd., free.

THE MRC CYCLOTRON

16 mm. Sound. English. Colour. 15 min.

A record of the medical cyclotron at Hammersmith Hospital, London. The layout of the suite is shown in a perspective drawing and each of the major units is visited. Featured are the cooling and ventilation plant, laboratories designed for the chemical and physical measurements of the isotopes, the magnet and pole pieces, together with the vacuum box and Dee system. There are also shots of the control board and other pieces of equipment.

Produced by the Radiotherapeutic Research Unit of the Medical Research Council at Hammersmith Hospital.

Available from the Photographic Section of the Unit, free.

THE LINEAR ACCELERATOR —NOVEL METHODS OF FUEL FABRICATION

THE MYSTERY OF MATTER

16 mm. Sound. Russian and English. Colour. 54 min.

A survey of man's knowledge of the structure and properties of matter starting from Democritus and ending with the work of the Curies. A review of the uses to which nuclear physics can be put to the benefit of mankind concludes the film.

Produced in Russia.

Available in the United Kingdom from Plato Films, Ltd.

NAISSANCE D'UNE USINE

16 mm. Sound. French. Colour. 32 min.

After a short preface on the extraction of uranium ore at Vendée, this film describes the laboratory research that has led to the perfection of the ion exchange process for concentrating the ore. There then follows a semi-industrial study of this process in a pilot plant. The film concludes with details of the construction of the Ecarpiere works of the Société Industrielle des Minerals de l'Ouest.

Produced by the Société Industrielle des Minerals de l'Ouest, Paris, 1958.

Available from Service Cinematographe ets Kuhlmann, Paris.

NAVAL RESEARCH LABORATORY REACTOR

16 mm. Sound. English. Colour. 25 min.

This is a semi-technical film which shows the U.S. Naval Research Laboratory's pool-type, 100 kW research reactor facility at Washington. All visible components are pictured and described. Action includes start-up, operation of controls and underwater shots of the Cerenkov radiation. Composition of fuel elements, assembly of core and methods of exposing samples are explained by cutaway drawings and animation.

Produced for the U.S. Naval Research Laboratory by the U.S. Navy Photographic Centre, Washington, 1958.

Available from U.S. Atomic Energy Commission headquarters and field libraries and the U.S. Navy, free.

A NEW TOOL FOR INDUSTRY

16 mm. Sound. English. Black and white. 20 min.

A survey of the valuable uses to which radioactive isotopes are being put in different branches of industry. The isotopes, made at the Atomic Energy Research Establishment at Harwell, are shown, for example, being used to solve a problem in the continuous casting of aluminium, to measure corrosion in oil-refinery pipes, and to trace a leak in a water main.

Produced by the UKAEA Film Unit, Harwell, 1955.

Available from COI Central Film Library (Cat. No. UK1493).

NON-ROOT FEEDING OF PLANTS

16 mm. Sound. English. Colour. 21 min.

Techniques of applying nutrients to the parts of a plant above ground level and the methods of tracing the nutrients through the plant's system by means of radioisotopes.

Produced for the Michigan State University and the U.S. Atomic Energy Commission by Colmes-Werrenrath Productions, Chicago, 1958.

Available from USAEC headquarters and field libraries, free; in the U.K. from the USAEC office, London.

NOVEL METHODS OF FUEL FABRICATION

16 mm. Sound. English. Colour. 13½ min.

The first novel method covered is cold closure—a process for the cladding of solid uranium fuel in aluminium by sizing on a heavy walled cup and then cold welding. Electron beam welding, a process utilizing electrons accelerated through a vacuum, is illustrated. Also covered is swaging, a process which has proved satisfactory in the fabrication of clad uranium oxide fuel elements.

Produced by the Hanford Atomics Products Operation, General Electric Company, at Richland, Washington, 1958.

Available from U.S. Atomic Energy Commission headquarters and field libraries and the producers, free; in the U.K. from USAEC office, London.

NUCLEAR REACTORS IN GERMANY

Details available from the producers, Gottinger Produktion Hans Heinrich Kahl.

NUCLEAR REACTORS FOR RESEARCH

16 mm. Sound. English. Colour. 15 min.

The basic design of a small homogeneous boiling water reactor is described and its construction, operation and the uses to which it can be put are illustrated.

Produced by North American Aviation Inc., California, 1955.

Available from U.S. Atomic Energy Commission offices, free.

OAK RIDGE RESEARCH STATION

16 mm. Sound. English. Colour. 20 min.

Summary of the components, facilities, uses and operation of the Oak Ridge Research Reactor, a tank-type heterogeneous reactor immersed in a pool. It is designed to operate at 20-30 MW.

Produced by the Oak Ridge National Laboratory, Oak Ridge, Tennessee, 1958.

Available from U.S. Atomic Energy Commission headquarters and field libraries, or the producers, free; in the U.K. from the USAEC office, London.

OCCUPATIONAL HEALTH PROBLEMS

16 mm. Sound. English. Colour. 42 min.

This film portrays industrial dermatitis, lead contamination, tuberculosis surveys, the common cold in industry, traumatic cases and burns, the basic principles of rehabilitation of the injured, radiation control and protective measures in the handling of contaminated material in atomic energy plants.

Produced by the Medical Film Guild, Ltd., New York.

Available from the producer, free or sale.

ON COURSE WITH AEI

16/35 mm. Sound. English. Black and white. 18 min.

A recruiting film, this follows the lives of three boys training to be professional engineers under the auspices of three AEI companies—British Thomson-Houston Co., Ltd., Metropolitan Vickers Electrical Co., Ltd., and Siemens Edison Swan, Ltd. The AEI apprentice school at Manchester is shown, together with shots of the boys gaining practical experience on the shop floor and at work in a technical college. The hostel accommodation and social facilities available to apprentices are also described. The film ends with a quick review of the opportunities for young men to reach top positions in AEI.

Produced for AEI, Ltd., by Ronald H. Riley in association with the Film Producers Guild, 1959.

Available from AEI, Ltd., London.

ORGANIC MODERATED REACTOR EXPERIMENT

16 mm. Sound. English. Colour. 16 min.

A pictorial summary of the fabrication and operation of the OMRE facility at the National Reactor Testing Station, Idaho. Organic materials are tested for use as a coolant and moderator. Methods of melting the coolant and organic moderator and monitoring techniques are depicted.

Produced for the U.S. Atomic Energy Commission by Atomics International, Canoga Park, 1958.

Available from USAEC headquarters and field libraries and the producer, free; in the U.K. from the USAEC office, London.

PASSAGE INTERDIT: LA CONTAMINATION RADIOACTIVE

16/35 mm. Sound. French. Colour. 17 min.

An instructional film showing the precautions that have to be taken by factory staff and others working with radioactive materials in order to protect themselves from contamination. An explanation of both external and internal contamination is given, followed by a description of how to prevent and detect them. Both collective and individual protection is dealt with and there are sequences on measures that have to be taken in the case of an accident.

Produced with the support of the health division of the French Atomic Energy Commission, Saclay, by Films du Cypres, Paris, 1958.

Available from the producers.

PEACEFUL USE OF ATOMIC POWER IN THE ROUMANIAN PEOPLES' REPUBLIC

Details can be obtained from the Roumanian Information Centre, London.

PERSONNEL PROTECTION IN TOXIC AREAS

16/35 mm .Sound. English. Black and white. 30 min.

This film shows the precautions necessary for people working in active areas. The donning of protective clothing, working in helmets and protective suits, the removal of active waste and the treatment of clothing after exposure to radioactivity are dealt with.

Produced by the AERE Film Unit, Harwell.

Available from the producers, free.

THE PETRIFIED RIVER

16 mm. Sound. English. Colour. 28 min.

This film tells how uranium was deposited far back in geologic time; about the search for the metal on the Colorado Plateau; how uranium is mined and milled; and about the peaceful applications of nuclear fission.

Produced by the Union Carbide and Carbon Corporation and the U.S. Bureau of Mines.

Available from U.S. Atomic Energy Commission offices, free; from MPO Distribution, Inc., New York, sale.

LA PILE ATOMIQUE

16/35 mm. Sound. French. Black and white. 30 min.

The construction of a nuclear reactor, the functions of its various parts and the uses to which the whole can be put are described.

Available from the Commissariat de l'Energie Atomique, Saclay; in the United Kingdom distribution enquiries should be addressed to the Scientific Office of the French Embassy, London.

PITUITARY IMPLANTATION WITH Au—98

16/35 mm. Sound. English and French. Black and white. 10 min.

This demonstrates by means of a dummy model a method of destroying the pituitary gland by implanting grains of radioactive gold.

Produced by the AERE Film Unit, Harwell.

Available from the producers, free.

PLUTONIUM FUEL FABRICATION FOR MTR

16 mm. Sound. English. Colour. 11 min.

The Materials Testing Reactor at the National Reactor Testing Station, Idaho, has been in operation utilizing plutonium as the entire fissionable fuel charge. This film details the fabrication of this charge in the Plutonium Metallurgy Laboratories of the Hanford Works, Richland. Aluminium 15 w/o plutonium alloy was cast, hot forged and roll-clad with aluminium for assembly into 18 fuel plate fuel elements.

Produced by the Hanford Atomics Products Operation, General Electric Company, at Richland, Washington, 1958.

Available from U.S. Atomic Energy Commission offices and the producers, free; in the U.K. from USAEC office, London.

PLUTONIUM METAL PREPARATION

16 mm. Sound. English. Black and white. 12 min.

This shows the equipment and process designed and used at the Los Alamos Scientific Laboratory in converting plutonium from a nitrate solution to elemental metal. Because of the injurious nature of plutonium, processing is carried out in airtight compartments and is operated by remote control. The isolated plutonium is used for metallurgical and pyrometallurgical research fuel alloy development and for reactor and critical assembly elements.

Produced by the Los Alamos Scientific Laboratory, New Mexico, 1958.

Available from U.S. Atomic Energy Commission headquarters and field libraries and from the producers, free; in the U.K. from the USAEC office, London.

THE PORTSMOUTH STORY

16 mm. Sound. English. Black and white. 23 min.

The construction of the U.S. Atomic Energy Commission's gaseous diffusion uranium separation plant at Portsmouth, Ohio.

Produced by the U.S. Air Force Lookout Mountain Laboratory.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

POWER REACTORS—U.S.A.

16 mm. Sound. English. Colour. 55 min.

This is semi-technical and deals with the entire panorama of the United States power reactor programme. Major developments are shown in the technology of the pressurized water,

boiling water, homogeneous, organic moderated, sodium-graphite and fast breeder reactor concepts. Shots of the Shippingport, Army Package Power Reactor, Indian Point, Yankee, Experimental Boiling Water, Vallecitos, Dresden, OMRE, SRE, EBR, PRDC and Homogeneous experiments I and II projects are used as illustrations of these concepts in practice. Animation is used for explaining technical points.

Produced for the U.S. Atomic Energy Commission by the Los Angeles Division, Lytle Engineering & Manufacturing Co., U.S.A., 1958.

Available from U.S. Atomic Energy Commission offices, free; from Byron, Inc., sale; from Lytle Engineering & Manufacturing Co., sale; in the U.K. from USAEC office, London.

POWER UNLIMITED

16 mm. Sound. English. Black and white. 12½ min.

A film in the series " The Magic of the Atom," this tells the story of the development of nuclear power, and describes the first generation of useful power from the Experimental Breeder Reactor.

Produced by the Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producers, sale.

PRACTICE OF RADIOLOGICAL SAFETY

16 mm. Sound. English. Black and white. 33 min.

One of " The Radioisotope " series, the film depicts a visit through a radioisotope laboratory, and discusses handling of radioisotope shipments; preparation of therapeutic doses; need for and function of a local radioisotope committee; laboratory design; decontamination; use of shielding; measurement of personnel exposure; and other topics pertinent to health safety.

Produced for the Army Surgeon-General by the U.S. Army Signal Corps, 1952.

Available from U.S. Army area headquarters and the U.S. Atomic Energy Commission, free; from World Films United, Inc., New York, sale.

PRIMER ON MONITORING

16 mm. Sound. English. Colour. 30 min.

Different types of radioactivity are described; the principles of detection and calibration explained; levels of penetration by different types of radiation examined; and methods of radiation monitoring discussed.

Produced by UCLA, West Los Angeles, California.

Available from the producer and U.S. Atomic Energy Commission headquarters, Washington, free.

PRINCIPLES OF NUCLEAR FISSION

16 mm. Sound. English, German, French and Italian. Colour. 10 min.

The animated section from " Criticality " showing the structures of the atom, the principles of nuclear fission and of a chain reaction. Intended for sixth form science students.

Produced for the UKAEA by G. Buckland Smith, in association with the Film Producers Guild, 1958.

Available from the UKAEA, London, and the Educational Foundation for Visual Aids, free.

PRACTICAL PROCEDURES OF MEASUREMENT

16 mm. Sound. English. Black and white. 48 min.

One of " The Radioisotope " series, it explains the need for radiation measurements, the principles and use of various types of instrumentation (emphasis on the Geiger-Mueller counter), and topics such as background, threshhold value, plateau and counting statistics. Sample preparation is demonstrated. Remainder of film is devoted to explanation and demonstration of absolute and comparative activity measurements.

Produced for the Army Surgeon-General by the U.S. Army Signal Corps, 1952.

Available from U.S. Army Divisional Headquarters and the U.S. Atomic Energy Commission, free; from United World Films, Inc., New York, sale.

PRINCIPLES OF RADIOLOGICAL SAFETY

16 mm. Sound. English. Black and white. 51 min.

One of " The Radioisotope " series, this film introduces concepts of internal and external, acute and chronic radiation exposure by means of a historical sequence on hazards associated with X-ray and radium therapy and radium dial painting.

NUCLEAR REACTORS IN GERMANY

—RADIATION: SILENT SERVANT TO MANKIND

Next discussed is ionization from external and internal sources of alpha, beta and gamma radiation, with detailed explanations of roentgen and " equivalent " or " energy " roentgen. Maximum permissible exposure and the theory of radiation measuring instruments are discussed. Formulae are developed for computing dosage rates from internal sources. Concepts of single and continued uptake, physical decay and biological elimination of activity, biological half-life and effective half-life are considered. Emphasis is given to the responsibility of the radioisotope user to the other members of the laboratory and to the public.

Produced for the Army Surgeon-General by the U.S. Army Signal Corps, 1952.

Available from U.S. Army area headquarters and the U.S. Atomic Energy Commission, free; from United World Films, Inc., New York, sale.

PROJECT 074

16/35 mm. Sound. English. Black and white. 13 min.

A description of the use of radioactivity applied to the measurement of engine wear in lubricating oil research, using a piston ring activated in the atomic pile at Harwell.

Produced for the Shell Petroleum Company.

Available from Petroleum Films Bureau, free.

PROPERTIES OF RADIATION

16 mm. Sound. English. Black and white. 68 min.

One of " The Radioisotope " series, it shows how a Geiger counter is used to compare penetrations of alpha, beta and gamma radiation and to derive their characteristic absorption curves. The beta radiation section of the film presents the cloud chamber, electrostatic generator and beta ray spectrometer, as well as the concepts of ionization, electron volt, beta-ray spectrum, neutrino, scattering, non-linear absorption and density thickness (mg/cm^2). The gamma radiation section explains bremestrahlung, photoelectric effect, Compton scattering, pair production, exponential absorption, absorption coefficient, and half-thickness. The final section concerns the interpretation of composite absorption curves.

Produced for the Army Surgeon-General by the U.S. Army Signal Corps, 1952.

Available from U.S. Army Divisional Headquarters and U.S. Atomic Energy Commission, free; from United World Films, Inc., New York, sale.

PROTECTING THE ATOMIC WORKER

16 mm. Sound. English. Black and white. 12½ min.

One of " The Magic of the Atom " series, it shows the safeguards used to protect men and women working with dangerous radioactive materials from contamination.

Produced by the Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producers, sale.

EN QUETE DES RADIOELEMENTS

16/35 mm. Sound. French. Colour. 15 min.

The preparation of different types of radioisotopes is shown and illustrations are given of some of the uses to which they can be put in agriculture, hydraulics and the glass and plastics industries.

Produced with the support of the Commissariat de l'Energie Atomique by les Films du Cypres, Paris, 1957-58.

Available from the Commissariat de l'Energie Atomique; in the United Kingdom from the French Institute, London.

RADIATION: SILENT SERVANT OF MANKIND

16 mm. Sound. English. Black and white. 12½ min.

One of " The Magic of the Atom " series, this shows four examples of the use of radiation in research and medical work. A cobalt source at the Brookhaven National Laboratory bombards plants to aid studies in genetics that may lead to

better strains of food crops; a particle accelerator at the University of California's Berkeley laboratory directs a beam of sub-atomic particles against a test animal to aid studies of the therapy of deep-seated tumours; a patient at Brookhaven Cancer Research Hospital is treated for cancer of the thyroid with the help of radioactive iodine; plans for a medical research reactor are discussed.

Produced by the Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

RADIOACTIVE ISOTOPES

16 mm. Silent. English sub-titles. Colour. 20 min.

An account of the clinical and surgical uses of radioisotopes. A competent medical commentator is necessary.

Produced by Professor D. W. Smithers, of the Royal Marsden Hospital, London.

Available to qualified medical and allied professional groups only from Professor Smithers, free.

RADIOACTIVITY

16 mm. Sound. Norwegian and Dutch. Colour. 7 min.

Produced by Norsk Dokumentarfilm.

Available from Institutt for Atomenergi, Lillestrom, Norway.

RADIOCHEMICAL TECHNIQUES—Part I—Alpha

16/35 mm. Sound. English. Black and white. 34 min.

This film deals with the precautions and procedures that are necessary in the handling of chemicals emitting alpha radiation. It forms an introduction to radiochemistry. Health precautions are emphasized.

Produced by the AERE Film Unit, Harwell.

Available from the producers, free.

RADIOCHEMICAL TECHNIQUES—Part II—Beta-Gamma

16/35 mm. Sound. English. Black and white. 34 min.

This film deals with the precautions and procedures necessary in the handling of beta-gamma radioactive substances. Great emphasis is placed on code of behaviour in the laboratory.

Produced by the AERE Film Unit, Harwell.

Available from the producers, free.

THE RADIOISOTOPE

16 mm. Sound. English. Black and white.

This is the general title of a series of films covering all aspects and uses of radioactive isotopes. For details of each film, see entries under the following headings:—

Fundamentals of Radioactivity
Properties of Radiation
Practical Procedures of Measurement
Methodology
Principles of Radiological Safety
Practice of Radiological Safety
Radioisotopes in Agricultural Research
Radioisotopes in General Science

These films were produced by U.S. Army Signal Corps for the Army Surgeon-General.

They are available on loan from U.S. Army Divisional Headquarters and with certain restrictions from the U.S. Atomic Energy Commission.

RADIOISOTOPES IN AGRICULTURAL RESEARCH

16 mm. Sound. English. Black and white. 41 min.

One of "The Radioisotope" series, this film explains the following three classes of work: (1) use of phosphorus-32 in large-scale field tests of fertilizers; (2) use of cobalt-60 in micronutrient studies with large domestic animals (a related study concerning the incorporation of inorganic cobalt into vitamin B-12 is included); and (3) use of calcium-45 in macronutrient problems. Film concludes by mentioning other ways in which radioisotopes are used in agricultural research. Health safety procedures and techniques unique to large-scale field and animal research are stressed.

Produced for the Army Surgeon-General by the U.S. Army Signal Corps, 1952.

Available from U.S. Army area headquarters and the U.S. Atomic Energy Commission, free; from United World Films, Inc., New York, sale.

RADIOISOTOPES IN GENERAL SCIENCES

16 mm. Sound. English. Black and white. 46 min.

One of "The Radioisotope" series, this film traces eight experiments illustrating how radioisotopes can be used in metallurgy, chemistry, biochemistry and plant physiology. They are: (1) self-diffusion of solid copper; (2) study of vapour pressure over metallic silver; (3) exchange of chloride ions in solid and liquid; (4) exchange of sodium and potassium through cell wall; (5) rearrangement of atoms within a molecule—Wolff rearrangement of a diazoketone; (6) metabolism of cholesterol from sodium acetate in liver; (7) fate of carbon atoms during metabolism of glycine in blood; and (8) tracing the chemical path of carbon during photosynthesis in algae. Methodology of tracer research is illustrated.

Produced for the Army Surgeon-General by the U.S. Army Signal Corps, 1952.

Available from U.S. Army area headquarters and the U.S. Atomic Energy Commission, free; from United World Films, Inc., New York, sale.

RADIOISOTOPES: THEIR APPLICATIONS TO HUMANS

16 mm. Sound. English, French, Spanish and Russian. Colour. 32 min.

This film gives a comprehensive review of up-to-date practices in the use of radioisotopes. Tracer studies and therapy applied to the patient show the use of radioactive iodine, sodium, iron, calcium, lanthanum, strontium, cobalt, phosphorus, gold and the neutron capture therapy involving boron for treatment of brain tumours.

Produced by the Medical Film Guild, New York.

Available from the producer, on loan or sale.

RADIOISOTOPES IN INDUSTRY

16/35 mm. Sound. English, French, German and Italian. Colour. 26 min.

The film describes the nature of radioactive isotopes and the many uses to which they can be put in industry, for the analysis of continuous flow processes, for accurate measurement of minute quantities, for radiography and for their effects upon chemical reactions.

Produced for the UKAEA by G. Buckland Smith, in association with the Film Producers Guild, London, 1958.

Available from the UKAEA, London, free.

RADIOPHARMACEUTICALS: FROM REACTOR TO PHYSICIAN

16 mm. Sound. English. Colour. 12 min.

The purification and processing of radioisotopes for use by the physician are covered. Emphasis is placed on the production of various radiopharmaceuticals in enscapulated form, together with methods used for their assay and standardization. A clinical section deals with the newest methods of thyroid uptakes, new iodine therapy and the use of Racobalamin(R) and Raolain for the diagnosis of pernicious anaemia and faulty fat absorption.

Produced for Abbott Laboratories, Illinois, by the Jam Handy Organization, Detroit, 1958.

Available from Abbott Laboratories, free.

REACTOR FUEL PROCESSING

16 mm. Sound. English. Colour. 20 min.

Radiochemical processing of irradiated reactor fuels, covering steps in chemical separation and waste disposal operations at pilot plant at Oak Ridge National Laboratory; production facilities at the National Reactor Testing Station, Idaho; Hanford Works, Richland, Washington; the Savannah River Plant; and process research activities at the Argonne and Oak Ridge National Laboratories.

Produced by the Oak Ridge National Laboratory, Tennessee, 1958.

Available from U.S. Atomic Energy Commission offices and the producers, free; in the U.K. from the USAEC office, London.

RESEARCH INTO CONTROLLED FUSION

16 mm. Sound. English. Colour. 55 min.

Progress report on the fusion research programme sponsored by the U.S. Atomic Energy Commission at Princeton University, Oak Ridge National Laboratory, Los Alamos Scientific Laboratory and the University of California Radiation Laboratory. The various pinch, mirror, rotating plasma, DCX and Stellarator machines are shown.

Produced for the U.S. Atomic Energy Commission by the U.S. Army Pictorial Centre, Long Island City, New York, 1958.

Available from USAEC headquarters and field libraries, free; in the U.K. from USAEC office, London.

RESEARCH REACTOR SAFETY DEVICE
16 mm. Sound. English. Colour. 12½ min.

Atomics International have designed and built and successfully tested a reactor safety "fuse." It is designed to provide absolute protection by shutting down "pool" type reactors without the use of external controls in the event of an abnormal operating condition.

Produced for the U.S. Atomic Energy Commission by Atomics International, Canoga Park, California, 1958.

Available from USAEC headquarters and field libraries and the producers, free; in the U.K. from the USAEC office, London.

RESEARCH REACTORS—U.S.A.
16 mm. Sound. English. Colour. 38 min.

A summary of the major types of research reactor—swimming pool, tank, water boiler and graphite moderated—with descriptions of their uses in research, industry, chemistry, physics, metallurgy, biology and medicine. Reactors at Argonne National Laboratory (the Argonaut and CP-5), Michigan University, Armour, and Brookhaven are shown, together with the 10w solution type designed by Atomics International and the solid homogeneous by Aerojet-General Nucleonics.

Produced for the U.S. Atomic Energy Commission by the Los Angeles Division, Lytle Engineering & Manufacturing Company, 1958.

Available from USAEC headquarters and field offices, free; from the producers, sale; or Byron Inc., Washington, sale; in the U.K. from the USAEC office, London.

THE RIDDLE OF PHOTOSYNTHESIS
16 mm. Sound. English. Black and white. 12½ min.

One of "The Magic of the Atom" series, this film illustrates and explains research carried out on photosynthesis in plant life. Scientists at the Radiation Laboratory, Berkeley, California, use radioisotopes as tracers in learning more about this phenomenon.

Produced by the Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

ROTATION X-RAY THERAPY
18 16 mm. Silent. English sub-titles. Black and white. 20 min.

A film showing the therapeutic uses of radioisotopes. A competent medical commentator is necessary.

Produced by Professor D. W. Smithers, of the Royal Marsden Hospital, London.

Available to qualified medical and allied professional groups only, from Professor Smithers, free.

SAFETY ASPECTS OF EXPERIMENTS WITH A BOILING REACTOR
16 mm. Sound. English. Black and white. 19½ min.

This film records a number of safety experiments with a prototype boiling water reactor, concluding with the deliberate destruction of the reactor assembly when the reactor was allowed to "run away."

Produced by the Argonne National Laboratory, 1955.

Available from the producer and U.S. Atomic Energy Commission offices, free; from Colburn Laboratory, Inc., Chicago, sale.

SCIENTIFIC ADVANCEMENT
16 mm. Sound. English. Black and white. 20 min.

One of the "Atoms for Peace" series, this describes progress that has been made in the production of nuclear electric power, use of nuclear irradiation in food production and preservation, use of isotopes in ensuring thickness control in manufacturing and in measuring soil density in road building, and radiation therapy in the treatment of cancer and heart disease.

Produced by the U.S. Information Agency.

Available from U.S. Atomic Energy Commission offices, free; from United World Films, Inc., New York, sale; in the United Kingdom from COI Central Film Library, London, and Scottish Film Council, Glasgow, free.

THE SEARCH: URANIUM PROSPECTING AND MINING
16 mm. Sound. English. Black and white. 23 min.

This tells the story of the exploration, prospecting and mining of uranium ores in the Colorado Plateau.

Produced by Columbia Broadcasting System Television in collaboration with the Colorado School of Mines.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

RADIOACTIVE ISOTOPES —SODIUM REACTOR EXPERIMENT FABRICATION

LES SECRETS D'UNE PILE ATOMIQUE
16/35 mm. French. Colour. 20 min.

Description of the features and construction of the EL-3 pile at the French atomic energy research establishment, Saclay.

Produced with the support of the Commissariat de l'Energie Atomique by Socéité Nouvelle Pathé-Cinema, Paris, 1957.

Available from the Commissariat de l'Energie Atomique; in the United Kingdom from the French Institute, London.

SECURITY
16 mm. Sound. English. Black and white. 12½ min.

One of "The Magic of the Atom" series, this surveys the many and varied devices adopted for use in protecting the security of U.S. nuclear energy installations.

Produced by the Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

AU SERVICE DE LA VIE

A documentary on radiobiology made by the Commissariat de l'Energie Atomique.

Enquiries for availability in the United Kingdom should be addressed to the Scientific Office of the French Embassy, 22, Wilton Crescent, London, S.W.1.

SIR JOSEPH THOMSON, OM, FRS, DSc, ON "ELECTRONS"
16 mm. Sound. English. Black and white. 10 min.

One of a series of films in which eminent scientists talk on subjects with which their names will always be associated.

Produced by G.B. Educational Films in association with the Institution of Electrical Engineers, 1935.

Available in United Kingdom from G.B. Film Library (Cat. No. F.563); hire, 10s.; sale, £12.

SIR WILLIAM BRAGG, OM, FRS, DSc, ON "RADIOACTIVITY"
16 mm. Sound. English. Black and white. 10 min.

This is one of a series of films in which eminent scientists talk on subjects with which their names will always be associated.

Produced by G.B. Educational Films in association with the Institution of Electrical Engineers, 1935.

Available in the United Kingdom from G.B. Film Library (Cat. No. F.565); hire, 10s.; sale, £12.

SODIUM GRAPHITE REACTOR PROGRESS REPORT
16 mm. Sound. English. Colour. 17 min.

The film depicts a number of experiments devoted to the development of the sodium-graphite reactor, with special emphasis on the fuel element development. A number of sequences are about the testing of various components.

Produced by North American Aviation, Inc., California, 1955.

Available from the producer and U.S. Atomic Energy Commission offices, free

SODIUM REACTOR EXPERIMENT
16 mm. Sound. English. Colour. 22 min.

A summary of the preparation, fabrication and testing of the major reactor components, installation at the site, the start-up, operation of the reactor and control and safety elements of the Sodium Reactor Experiment designed, constructed and operated by Atomics International near Los Angeles.

Produced for the U.S. Atomic Energy Commission by Atomics International, Canoga Park, California, 1958.

Available from USAEC offices and the producers, free; in the U.K. from the USAEC office, London.

SODIUM REACTOR EXPERIMENT FABRICATION
16 mm. Sound. English. Colour. 19 min.

The fabrication and testing of the major components of the Sodium Reactor Experiment (SRE) are shown. A brief animated section deals with the chief engineering features

and also describes the basic layout of the reactor and associated facilities. Detailed information is presented on fuel element fabrication and testing, grid plate fabrication, control rod system testing, core tank fabrication, top plug fabrication, thermal shield ring fabrication, sodium pump inspection, heat exchanger and coolant piping inspection, and fuel handling system checkout.

Produced for the U.S. Atomic Energy Commission by Atomics International, 1957.

Available from the producers and U.S. Atomic Energy Commission offices, free; from Byron Inc., sale.

DIE SPALTUNG DES ATOMS

Details from the producers, International Fernseh-Agentur, Germany.

SPERT-I. EXPERIMENTS IN NUCLEAR REACTOR SAFETY

16 mm. Sound. English. Colour. 32 min.

SPERT (Special Power Excursion Reactor Test) is a tank-type atmospheric pressure, heterogeneous reactor designed primarily for the study of reactor kinetics and safety parameters in functionally similar reactors. The film illustrates a number of intentionally induced power excursions.

Produced for the U.S. Atomic Energy Commission Idaho Operations Office by the U.S. Air Force Lookout Mountain Laboratory, Hollywood, 1958.

Available from USAEC headquarters and field libraries, free; in the U.K. from the USAEC office, London.

SPRAYPAK

16 mm. Silent. English captions. Black and white. 12 min.

Operating data on a vertical and horizontal packing used in heavy water plant. (A sound track is to be added.)

Produced by the AERE Film Unit, Harwell.

Available from the producers, free.

STORY OF ENERGY

35 mm. Sound. English. Black and white. 17 min.

This film traces the growth of energy resources available to man. Coal, oil, gas and nuclear power are covered and there is reference to thermonuclear energy.

Produced by the Ministry of Information and Broadcasting, India.

Available from the Ministry, in Bombay, free or hire according to purpose.

STRAHLENSPIONE

16 mm. Sound. German (other language versions planned). Colour.

Further details from the producers, Euphono Film, G.m.b.H., Dusseldorf.

STRUCTURE OF MATTER

16 mm. Sound. Hungarian and English. Black and white. 15 min.

A summary of contemporary physics using electron micrographs, diagrams and atomic models.

Produced in Hungary, 1952.

Available in the United Kingdom from Plato Films, Ltd., hire, 7s. 6d.

TAGGING THE ATOM

16 mm. Sound. English. Black and white. 12½ min.

One of "The Magic of the Atom" series, it illustrates the manufacture of radioisotopes; production at an Oak Ridge reactor, purification, handling and packaging. Intended for non-technical audiences.

Produced by the Handel Film Corporation, Inc., Hollywood, California.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

TELETHERAPY AND BRACHYTHERAPY

16 mm. Sound. English. Colour. 18 min.

Diagnostic and therapeutic uses of such radioisotopes as cobalt-90, caesium-137, europium-152-154, iodine-131 and yttrium-90.

Produced for the U.S. Atomic Energy Commission by the Jam Handy Organization, Detroit, 1958.

Available from USAEC headquarters and field libraries, free; in the U.K. from the USAEC office, London.

THERMONUCLEAR RESEARCH IN U.S.S.R.

A film about the progress made by Russian scientists in their endeavours to harness nuclear fusion for peaceful purposes. First shown at the 1958 Geneva nuclear power conference.

Further details are available from the Soviet Film Information Office, London.

TRAINING MEN FOR THE ATOMIC AGE

16 mm. Sound. English. Black and white. 20 min.

One of the "Atoms for Peace" series, this shows young scientists of all nationalities as they attend the International School for Nuclear Science and Engineering at Argonne National Laboratory. Sequences showing the preliminary training given at Pennsylvania State College and the University of North Carolina are included, and there is a short sequence on the isotopes training courses given at the Oak Ridge Institute of Nuclear Sciences.

Produced by the U.S. Information Agency.

Available from U.S. Atomic Energy Commission offices, free; from United World Films, Inc., New York, sale; in the United Kingdom from the COI Central Film Library, London, and the Scottish Film Council, Glasgow, free.

TRIGA

16 mm. Sound. English. Colour. 7½ min.

The story of the TRIGA training research and isotope reactor conceived, designed and developed by General Dynamics Corporation's General Atomic Division. TRIGA is a type of reactor intended for installation in universities, training centres and hospitals. The film emphasizes and reports on transient power tests carried out on the prototype TRIGA installed at the John Jay Hopkins Laboratory.

Produced by the General Atomic Division of General Dynamics Corporation, San Diego, California.

Available from the producer, loan.

UNLOCKING THE ATOM

16 mm. Sound. English. Black and white. 20 min.

This film was produced primarily to introduce students to nuclear physics. Chain reaction, atomic structure, properties of alpha, beta and gamma rays, operation of cyclotron, and the contributions of various nuclear physicists and other scientists to our knowledge of the nuclear sciences are featured.

Produced by United World Films, Inc., New York.

Available from U.S. Atomic Energy Commission offices, free; from the producer, sale.

URANIUM-235

16 mm. Sound. French. Black and white. 18 min.

The preparation of uranium-235 and its use as an enriched fuel in nuclear reactors.

Produced by Flag Films.

Available from the French Institute, London.

l'URANIUM: FROM THE ORE TO THE METAL

16 mm. Sound. French. 12 min.

Animated film depicting the various processes involved in the preparation of uranium metal from the ore.

Produced for the French Atomic Energy Commission by Films Michel Gallon, 1958.

Available from the French Atomic Energy Commission.

URANIUM FRANCAIS

16 mm. Sound. French. Colour. 10 min.

A brief exposition of the main phases in the birth and exploitation of a mining bed, including the general systematic prospecting, detailed study on-site and laboratory study of the bed and the minerals it contains, and the development of the mining works. The second part of the film is about the construction of the uranium works of the Société Industrielle des Minerals de l'Ouest at Ecarpiere, some of the processing that goes on there and the official inauguration of the works.

Produced by the Société Industrielle des Minerals de 'lOuest and the Commissariat a l'Energie Atomique, 1958.

Available from producers.

UTILIZATION OF RADIOISOTOPES IN THE FEDERAL REPUBLIC

Details from the producers, Euphono Film, G.m.b.H., Dusseldorf.

VALLECITOS BOILING WATER REACTOR

16 mm. Sound. English. Colour. 8 min.

Operation of the General Electric Boiling Water Reactor and the Pacific Gas & Electric Company's turbine-generator installation at Vallecitos, near Pleasanton, California. Loading of the reactor, interior of the containment vessel and the turbine-generator installation are shown. Start-up procedures

and actual operating sequences are shown, including close-ups of control and instrumentation.

Produced by the General Electric Co., San Jose, California. 1958.

Available from U.S. Atomic Energy Commission headquarters and field libraries; and the producers, free; in the United Kingdom from International GEC of New York office, London and from the USAEC office, London; in Europe from International GEC office, Paris, free.

VERS l'AGE ATOMIQUE

16/35 mm. Sound. French. Colour. 32 min.

Various phases in the construction of the natural uranium graphite moderated reactor piles, G2 and G3, at Marcoule. The civil engineering work and fabrication of the concrete pressure vessels are shown, together with the fabrication of the reactor, core and the heat exchangers, charging and control devices, and ancillary plant.

Produced for the Commissariat a l'Energie Atomique and Société Alsacienne de Constructions Mécaniques by Société Atlantic Film, Paris, 1958.

Available from the Commissariat a l'Energie Atomique.

A VISIT TO JENER

16/35 mm. Sound. Norwegian and English. Black and white. 22 min.

JENER is the Joint Establishment for Nuclear Research of the Norwegian and Netherland Governments. Sited at Kjeller, Norway, it is organized through a Joint Commission made up of scientists from both countries. The major research facilities include JEEP—a 700 kW heat heavy water moderated and cooled natural uranium reactor—chemical laboratories, metallurgical laboratories, physics laboratories, a hot laboratory, and crystal construction laboratories and other supporting.

Produced by Norsk Dokumentarfilm for the Institutt For Atomenergi.

Available from the Institutt For Atomenergi, Lillestrom, Norway.

WORKING TOGETHER

16 mm. Sound. English. Black and white. 21 min.

One of the "Atoms for Peace" series, this describes regional and international co-operation of scientists and governments in the development of peaceful uses of nuclear energy and some of the achievements of this co-operation, such as the flow of isotopes from one country to another, the transfer of fissionable materials for research purposes, and the establishment of international centres for nuclear research. (U.S.A.).

Produced by the U.S. Information Agency.

Available from U.S. Atomic Energy Commission offices, free; from the United World Films Inc., New York, sale; in the United Kingdom from COI Central Film Library, London, and Scottish Film Council, Glasgow, free.

DIE SPALTUNG DES ATOMS —ZERO POWER REACTOR III

THE YUKAWA STORY

16 mm. Sound. English. Black and white. 41 min.

This film reviews the life of the atomic physicist and Nobel Prize winner in nuclear physics, Dr. Hideki Yukawa. The scientist's son Taka-aki Yukawa narrates the story of the lives of his father and mother and explains the philosophies they represent. As he interprets their lives, Taka-aki sees the complementary blending of modern day science and the cultural heritage of the past.

Produced for the United States Information Agency.

Available from United World Films Inc., in the United Kingdom, from the British Film Institute, London and the Scottish Film Council, Glasgow, and Manchester Education Committee.

ZERO POWER REACTOR III

16 mm. Sound. English. Colour. 10 min.

Operating methods of the Zero Power Reactor (ZPR-III) are illustrated. This reactor is used for the study of fuel configurations and their effect upon a critical assembly.

Produced by the Argonne National Laboratory, Lemont, Illinois. 1958.

Available from U.S. Atomic Energy Commission offices and the producers, free; in the U.K. from the USAEC office, London.

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CHOOSING A PROJECTOR

THERE is such a variety of 16 mm projection equipment available these days that it is sometimes difficult for the potential user to make up his mind which to choose. This article describes the essential features of a projector and points out aspects of these features which make the projector a good one or not.

There are five basic sections to a projector—the lighting system, the optical system, the fan and motor, amplifier, and the film transport mechanism. There are also facilities for re-winding, still projection and maintenance. These parts will be examined separately.

A good projector should have an adjustable lamp-holder. It is true that bi-plane filament lamps are referred to as "Prefocused" but the intense heat that they generate can cause changes within the lamp which will make slight adjustments desirable. Another important point is that the lamp should be easily removable and yet, for obvious reasons, completely steady and free of movement during screening. Above all, the lamp must provide uniform brilliance and be adequately cooled, but these factors, being inter-related to other parts of the projector system, will be described elsewhere.

Since a projector lamp has a rating of 750-1,000w, a transformer or resistance unit is obviously necessary

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CHOOSING A PROJECTOR

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when a 115v lamp is used; there are advantages in having the transformer or resistance unit separate from the projector rather than incorporated into the housing. In fact, mains lamps, which operate direct from the mains supply are available now and some projectors are specially designed for the purpose—an obvious advantage.

The optical system comprises the reflector, the condenser and the lens elements. Again, ease of access to the various components is important. The function of the reflector which must be able to withstand heat of a high order, is to assist the lamp in providing the uniform illumination which is essential to good projection.

The purely optical considerations of the condenser are obvious but from the practical view-point it should be possible to remove it easily for cleaning. There is much to be said, too, for the inclusion of a heat-filter between the condenser and the film in the form of a safety shutter. Made of a special type of glass, a heat filter prevents damage to the film if it is stopped in the gate by accident when the lamp is on, or when stills are being projected. Other types of heat filter include a metal gauze screen, but they are not so successful as the glass types which are designed to eliminate the infra-red end of the spectrum.

Of the type of lens and the various combinations of elements much could be written that is beyond the scope of this article. The lens combination of a piece of precision equipment built by reputable people will obviously be the best of its type available, although there are obvious advantages where the lenses are made by the manufacturers of the equipment and so designed to a specific function rather than adapted to it.

Lens should for preference be " bloomed." Again, since critical focusing is important, an effective lens locking device should be provided so that continual re-focusing is avoided.

Quiet Motor Necessary

An important point in a good projector is the inclusion of a good, powerful, quiet-running motor. It has a great deal of work to do in operating the shutter, the film, transport mechanism and the fan for cooling the entire system. Since we shall cover the first two items in some detail under a separate heading, space should be given here to the cooling system.

Just how important cooling is will be understood when it is realised that the lamp is generating heat equivalent to an electric fire. Proper cooling is vital.

The fan should supply a good draught of air to the bottom of the lamp-house and the interior of the lamp-house should be designed so as to convey the generated heat away rapidly, Ideally, the fan should be mounted integrally on the motor-shaft and the cooling system so arranged that the three heat-forming units in the projector-motor, lamp and amplifier—are all cooled effectively. A proper arrangement can ensure that a draught of slightly warmed air is directed at the base of the lamp, which is an advantage.

Simple Re-Wind Wanted

Another function which the motor in a good projector should perform is that of re-wind. Being able to re-wind film without the need for additional equipment is an obvious advantage to most users of projectors. When re-wind is provided, the operation ought to be a simple, automatic process without the need for changing belts and pulleys.

A dog-clutch is essential in providing a simple, safe and trouble-free re-wind, to prevent film damage when film is released for projection.

Lubrication is vital in a piece of equipment which requires smooth running from so many moving parts. A good oiling system is essential and the simpler it is the better. A wick-feed or a single oiling point will reduce maintenance to a minimum in that a drop or two of oil after each performance will be all that is necessary for efficient lubrication.

A three-claw shuttle has many advantages. It engages three film perforations simultaneously and feeds the film effectively even when two or more consecutive perforations are damaged. A three-claw shuttle gives a smoother, quicker "draw-down" which eliminates unnecessary movement and flicker. Quietness too, is a very desirable quality, and a well-designed non-skip type transport mechanism will be unobtrusively quiet.

Importance of Shutter

The shutter is not strictly a part of the film transport mechanism, but since it works in close conjunction with it, it will be as well to mention it here. The shutter is necessary, of course, to provide a clear, steady picture; without it, the screen would merely show a meaningless blur.

There are different types of shutters available but one—the barrel type—is worthy of special mention. Only the barrel-type shutter dissolves toward the centre when in motion and this helps to provide a smooth, continuous picture free from irritating flicker.

The design of the gate is very important. It can ruin film or be kind to it. Again, several different types are available. For simplicity they can be divided into two categories; flat gates and curved gates.

The curved gate is good in that it tends to follow the shape of the film in its natural state, but this advantage is largely offset in that it also gives the film more wear than a flat gate. Of the flat gates, a long, rather than a short gate is preferable. The long gate has the advantage of covering a greater length of film, and therefore requires considerably less pressure put upon it to keep the film in position: this reduces tension and friction, and furthers the life of both the film and the film gate. It must be remembered, too, that all gates collect dust. That is why whatever type of gate is chosen, it is essential that it should be easily removed.

A gate should be cleaned after each performance. It is generally made of a chromed metal or a nickel steel alloy.

Finally, a word about threading the film, or lacing, as it is called. This should be as simple as possible and, for a number of reasons, require as short a length of film as possible.

Threading a good projector should take as little as 10 sec and be thoroughly straightforward. It should follow as closely as possible 35 mm practice in that a minimum of film is left exposed to dust. An automatic loop synchronizer is a distinct advantage if damaged film is encountered, in that it enables the loss of film loop to be corrected without stopping the projector or damaging the film further.

The quality of sound reproduced is obviously important, whether optical or magnetic soundtracks are used. (The better projectors have facilities for both). The sound drum should be of the rotating type, which avoids a sliding action between the drum and the film during running, and so reduces wear.

On the best projectors facilities are provided in the form of a loop-synchronizing roller which ensures that accurate synchronization is maintained.

Quality at All Volumes

The amplifier which feeds the sound from the drum to the speaker, must be capable of giving a good, high-fidelity performance even at low-level volume. Equally, it must be capable of giving increased volume without distortion. A tone-control is essential in order to cope with the varying acoustic qualities which will be encountered, and the speaker must be free of jar and shudder when operating.

Finally, there is the matter of the placing of the controls for these and all the foregoing operations. Obviously the best answer is a central control panel. Many of the adjustments to a projector must be made in partial darkness which is why simple, comprehensive controls are so very necessary.

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NUCLEAR ENERGY ENGINEER acknowledges the assistance given by film distributing organizations and the Scientific Film Association in the compilation of this survey and thank in particular Mr. G. Buckland-Smith for his advice

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